



Mangroves in Del Carmen, Siargao Islands, Philippines. Photo credit: Ferdz Decena for Rare.

# **Landscape analysis and opportunity study on marine biodiversity and blue carbon ecosystems in the Philippines**



**Authors:** Lisa Schindler Murray (Rare), Ethel Wagas (Rare Contractor), Dennis Calvin (Rare), Emily Goodwin (Rare), Diane Figueroa (Rare) and Candeze Mongaya (Rare)

**Reviewers:** Romain Chabrol (AFD), Pauline Poisson (AFD), Thierry Liabastre (AFD), Kaila Ferrari (Rare), Kyla Timberlake (Rare), Aya Silva (Rare), Rocky Sanchez Tirona (Rare), Kate Schweigart (Rare), Uli Graebener (Rare), Frederik Stapke (Rare), Arnas Danusas (Rare,) Caitlin Flannery (Rare) and Elline Canares (Rare)

**Suggested Citation:** Schindler Murray, L., Wagas, E., et al. 2024. "Landscape analysis and opportunity study on marine biodiversity and blue carbon ecosystems in the Philippines." Report.

This report was prepared with the support of the Agence Française de Développement (AFD)

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# Abstract

This paper intends to serve as a resource covering the ecological, social, and policy context of coastal resource management and policy in the Philippines to support future investment and collaboration decisions around blue carbon ecosystem project development.

Within the report, this analysis presents an overview of relevant topics to coastal ecosystem protection in the Philippines, including the state of play around marine and coastal biodiversity, trends, and pressures, the relevant national policy landscape, and a review of past and ongoing coastal conservation initiatives.

The paper also identifies gaps and opportunities for investment, structured around scientific and technical capacity development, policy and governance, as well as mobilizing diverse sources of capital for the protection, conservation and restoration of coastal ecosystems, finding that:

- (1) Institutional coordination is a challenge for blue carbon ecosystems given the crosscutting jurisdictions of mangroves and seagrasses as well as the multitude of departments that touch on blue carbon topics ranging from biodiversity conservation, finance, climate change, fisheries, and development for tourism or infrastructure.
- (2) Transparent and common datasets, combined with the technical expertise to develop accurate ecosystem extent maps and relevant carbon accounting baseline data, is necessary for developing, monitoring and evaluating blue carbon projects, which include carbon market or non-market approaches.
- (3) The increase in global attention to blue carbon markets poses a unique opportunity and challenge for the Philippines as there is demand but not verified quality supply yet, nor is there a national carbon credit or pricing regulation that sets a common approach at the national level. It will be particularly critical to set plans for how these blue carbon emission reduction projects can generate finance for local communities and contribute to the national mitigation targets without double counting.

The Philippines is a unique country of 7,641 islands. Over 7 million Filipinos occupy land within 1m of local average high tide lines, 24 million within 5m, and 36 million within 10m — these coastal populations are increasingly exposed to rising sea levels and increased frequency and intensity of storms in a changing climate.<sup>1</sup> Investing in the conservation, restoration, and sustainable management of coastal ecosystems presents an incredible opportunity to build the resilience of the Philippines, if appropriately designed, managed, and financed. This report should serve as a tool to orient future decisions around blue carbon project development and investment.

## Section 1. Introduction

*“The Philippines is a living testament to the harsh realities of climate change. We have faced and continue to face the wrath of devastating typhoons, rising sea levels, and the perilous threats posed to our biodiversity and ecosystems, agriculture and livelihoods. [...] We also seek to advance the values of our biodiversity and our oceans as the source of Nature-based Solutions to our climate crisis and to serve as the foundation for inclusive and resilient development. [...] Excellencies, we must all seize this moment and move forward with*

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<sup>1</sup> World Bank. <https://openknowledge.worldbank.org/handle/10986/38280>

*courage, unity, and determination, towards a more resilient, equitable, sustainable, and prosperous global community. Let us set aside differences for the sake of our planet and all peoples. It is truly only through collective action that we can secure a sustainable and resilient future for the generations to come.”*

– Excerpts from the Philippines National Statement at UNFCCC COP28 delivered by Honorable Maria Antonia Yulo Loyzaga Dubai, UAE. December 9, 2023.

This report aims to provide the Agence Française de Développement (AFD) with an inclusive general state of the coastal ecosystems in the Philippines, focusing on blue carbon ecosystems — mangrove forests, seagrass meadows, and salt marshes.

The landscape analysis collates a non-exhaustive list of key resources, tools, and blue carbon methodologies in the Philippines and international context to orient and inform decision-making. The report also provides an overview of select crosscutting and relevant topics to national blue carbon and coastal ecosystem protection, such as marine and coastal biodiversity, sustainable blue economy and ocean governance, initiatives/programs with a mangrove or seagrass focus (including restoration projects), coastal fisheries for biodiversity and resilience, and financial mechanisms for blue carbon/coastal ecosystems.

The World Risk Index ranked the Philippines as the country with the highest disaster risk in 2022. Catastrophic extreme weather events in the Philippines, such as typhoons, are becoming more frequent and intense under changing climate scenarios. President Ferdinand ‘Bongbong’ Marcos, Jr. has expressed national-level commitment to increasing the country’s climate resilience and sustainable economic growth. Recent estimates from the Asian Development Bank indicate that the Philippines will lose 6 percent of its GDP annually by 2100 due to climate-related disasters if it fails to build sufficient climate resilience.<sup>2</sup> As part of climate resilience measures, protecting, restoring and sustainably managing natural ecosystems has also been estimated to generate billions of Philippine peso (PHP) annually. The Philippines’s National Adaptation Plan (NAP) estimates the country’s coral reefs, forests, and mangroves values at 70,000 PHP/ha/yr, 200,000 PHP/ha/yr, and 200,000 PHP/ha/yr, respectively. Globally, the World Bank has estimated that mangroves protect more than 6 million people from flooding and prevent nearly USD \$24 billion in losses.<sup>3</sup>

These estimates demonstrate the financial benefit of protecting and sustainably managing coastal ecosystems for its ecosystem services such as coastal protection and provide further rationale for the importance of protecting them. Increased coastal development, agriculture, aquaculture, pollution, and climate impacts have heavily exploited coastal ecosystems in recent years, negatively impacting local livelihoods, ecosystem health, and the economy.

The Agence Française de Développement (AFD), France's bilateral development bank and agency, has been working for 80 years to tackle poverty and foster development in developing countries while also supporting economic and social development in the French overseas territories. AFD has supported a territorial approach (financing local authorities, natural disaster risks, and urban public transport) in the Philippines since 2009. With the increasingly interlinked sectors of climate action and economic development, together with crosscutting sectors around a just transition and Nature-based Solutions, AFD is refocusing its priorities around the fight against climate change and the resilience of the Filipino

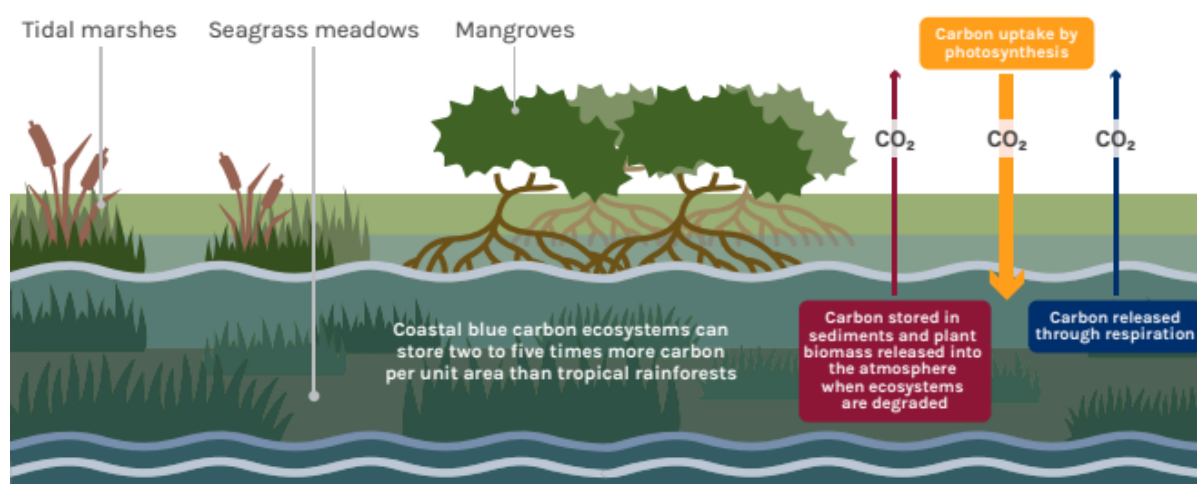
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<sup>2</sup> US Department of State. 2023. [Investment Climate Statements: Philippines](#).

<sup>3</sup> The World Bank. [The Changing Wealth of Nations 2021: Managing Assets for the Future](#). Accessed: March 2024.

people. Based on the 2021-2026 AFD Country Strategy, which aligns with the Philippine Development Plan, AFD aims to:

- Support the low-carbon development of the country, contributing to the sustainability and equity of the proposed trajectories;
- Strengthen the protection and resilience of populations and ecosystems; and
- Develop priority strategic partnerships and knowledge generation.



**Figure 1.** Mangroves, seagrass meadows, and tidal marshes are blue carbon ecosystems, with the potential to store significant amount of carbon in its soil, and conversely emit carbon if degraded or deforested.

*“The IPCC (2019) defines blue carbon as ‘all biologically-driven carbon fluxes and storage in marine systems that are amenable to management’ (Figure 1). The IPCC focuses on coastal blue carbon ecosystems, including mangroves, seagrass meadows and tidal marshes, as these are the three coastal wetland ecosystems with broad distributions that have internationally adopted methodologies for carbon accounting as defined through the IPCC Wetlands Supplement (IPCC 2013).”*

– Excerpt and figure from the Ocean Panel’s Special Report on Blue Carbon, The Blue Carbon Handbook: Blue carbon as a nature-based solution for climate action and sustainable development.<sup>4</sup>

Blue carbon ecosystems refer to mangroves, seagrasses, and tidal salt marshes. The protection, restoration, and sustainable management of these three coastal ecosystems contribute to climate mitigation and adaptation strategies (also considered Nature-based Solutions<sup>5</sup>). Coastal Nature-based Solutions like the conservation and restoration of blue carbon ecosystems have gained international recognition as a cost-effective approach to address global challenges like climate change, biodiversity loss, and sustainable development with direct local impact.

Nature-based Solutions are also integrated as pillars or priorities for several international initiatives, such as the High Ambition Coalition for Nature and People<sup>6</sup> and the Global Shield against Climate

<sup>4</sup> Ocean Panel. 2023. [The Ocean Panel’s Special Report on Blue Carbon: The Blue Carbon Handbook](#).

<sup>5</sup> NbS are defined in UNEA Res 5.5, <https://wedocs.unep.org/bitstream/handle/20.500.11822/39864/NATURE-BASED%20SOLUTIONS%20FOR%20SUPPORTING%20SUSTAINABLE%20DEVELOPMENT.%20English.pdf?sequence=1&isAllowed=y>

<sup>6</sup> The High Ambition Coalition for Nature and People (HAC N&P) is an intergovernmental group of 118 countries co-chaired by Costa Rica and France, which was originally set up to deliver a global agreement of protecting at least 30% of planet’s land and 30% of the planet’s ocean by 2030. <https://www.hacfornatureandpeople.org/>

Risks<sup>7</sup>, which focuses on climate insurance and loss and damage. Both France and the Philippines are involved in all the above initiatives, demonstrating their shared commitment to nature and climate action. This landscape analysis will also provide an overview of relevant national and international partnerships and initiatives, and explore the current suite of national actors engaged in blue carbon and coastal ecosystem protection and sustainable management.

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<sup>7</sup> The Global Shield against Climate Risks is a joint G7/V20 initiative to strengthen the financial protection and resilience of vulnerable countries and people. <https://www.globalshield.org/>

## Section 2. General State of Play: Coastal Ecosystems

The Philippines is an archipelagic state of 7,641 islands with a total coastline of 36,289 km. The coast is home to about 60% of the Philippine cities, with about 31% of the population living within 10m of the ocean<sup>8</sup>. The Philippines is surrounded by 67,880,000 ha of territorial waters. It is one of the 18 mega-biodiverse countries in the world because of its high number of endemic species and diverse terrestrial and coastal habitats.<sup>9</sup> The Philippines has more than 52,177 described species, half of which are endemic to the country.<sup>10</sup> The country is in the Coral Triangle, known as the global epicenter of marine biodiversity. Its coastal zones are classified into 5 major ecosystem types: coral reefs, mangrove ecosystems, seagrass meadows, beach ecosystem, and estuaries/lagoons. These ecosystems serve as habitat to local and endemic species and are important stops for many migratory birds and large marine mammals.

The country's coastal and marine ecosystems are a crucial source of sustenance and livelihood for more than 2,190,043 municipal or artisanal fisherfolk<sup>11</sup>. Coastal ecosystems provide crucial ecosystem services such as livelihood and products for various sectors, such as aquaculture, fisheries, tourism and coastal protection.<sup>12</sup> One square kilometer of coral reef, for example, supplies approximately up to 30 tons of economically important and edible fish annually<sup>13</sup> and the Philippine reef fisheries are estimated to contribute USD \$42,000/km<sup>2</sup> to the economy annually.<sup>14</sup>

In the last few decades, the protection of coastal blue carbon ecosystems has been recognized to play a crucial role in carbon sequestration and storage. A recent study on the coastal and estuarine blue carbon stocks in the greater Southeast Asia Region reported that the Philippines, Indonesia, and Papua New Guinea have the largest carbon stocks, and therefore, play a significant role in regulating the region's climate.<sup>15</sup> Current estimates indicate the Philippines has the third largest mangrove carbon stock at 102 to 576 MgC/ha and the fourth largest seagrass carbon stock at 123 +/- 63 MgC/ha in Southeast Asia.<sup>16</sup>

This section will address the trends, pressures, and challenges faced by the coastal ecosystems in the Philippines, with particular focus on seagrasses and mangroves.

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<sup>8</sup> Over 7 million Filipinos occupy land within 1m of local average high tide lines, 24 million within 5m, and 36 million within 10m. <https://openknowledge.worldbank.org/handle/10986/38280>

<sup>9</sup> Azanza et al. 2017. [Valuing and Managing the Philippines' Marine Resources toward a Prosperous Ocean-Based Blue Economy](#).

<sup>10</sup> The Philippine Clearing House Mechanism. 2017. [Endemism & Uniqueness of Philippine Biodiversity](#). [Endemism & Uniqueness of Philippine Biodiversity](#).

<sup>11</sup> Presentation by Atty. Michael Andayog, OIC- BFAR Fisheries Regulatory Licensing Division on "AUU Areas Under Fishpond Lease Agreement"

<sup>12</sup> Philippine National Adaptation Plan (NAP) 2023-2050.

<sup>13</sup> Department of Environment and Natural Resources. Philippine Biodiversity Strategy and Action Plan 2015-2028.

<sup>14</sup> Tamayo et al. 2018. [National Estimates of Values of Philippine Reefs' Ecosystem Services](#).

<sup>15</sup> Thorhaug et al. 2020. [Coastal and estuarine blue carbon stocks in the greater Southeast Asia region: Seagrasses and mangroves per nation and sum of total](#).

<sup>16</sup> Corcino et al. 2023. [Status, limitations, and challenges of blue carbon studies in the Philippines: A bibliographic analysis](#).



## 2.1. Mangrove Ecosystems: trends and pressures

The Philippines is one of the world's top 15 most mangrove-rich countries — with a recorded 42 mangrove species<sup>17</sup> spanning 284,800 ha as of 2020.<sup>18</sup> Mangrove forests have both fisheries and non-fisheries benefits for coastal communities in the Philippines. These coastal forests are a valuable resource for small-scale fisherfolk, where an estimated 118,000 fishers reliant on the health of this ecosystem - 41% of national small scale fisherfolk.<sup>19</sup> Protecting and restoring mangrove forests is an important climate change adaptation strategy for the Philippines. Healthy and intact mangrove forests protect coastlines by decreasing the risk of coastal inundation and erosion, buffering the impacts of storm surges and typhoons, and supporting food and water security. Ecosystem-based adaptation and Nature-based Solutions for coastal ecosystems are noted as one of the thematic cross-sector focal strategies based on the Philippines Draft National Adaptation Plan (2023). However, mangrove forests are highly susceptible to loss and degradation due to human-driven pressures such as coastal infrastructure development, aquaculture, and agriculture.

The most important countries for mangrove fishers, with the modelled estimates of fisher numbers and the proportion of small-scale fishers (SSF) who fish in the mangroves.

COUNTRY	Mangrove fisher estimate	Percentage SSF mangrove fishers
Indonesia	893,000	39%
India	570,000	38%
Bangladesh	286,000	82%
Myanmar	286,000	69%
Brazil	278,000	53%
Vietnam	240,000	44%
Mexico	208,000	73%
Nigeria	150,000	89%
Thailand	127,000	55%
Philippines	118,000	41%

**Table 1.** Top mangrove countries and the related importance of the coastal ecosystems to the small-scale fisheries families and livelihoods depend on the ecosystem health. Of the SSF in the Philippines, 41% of them are mangrove dependent. The Global Mangrove Alliance. The State of the World's Mangroves. 2021 p42

In the 1920s, mangrove forests were estimated to cover 400,000-500,000 ha of the country's coastline but decades of unmitigated coastal development have led to a significant decline in mangrove cover<sup>20</sup>. Mangrove deforestation intensified in the 1950s when the government promoted the establishment of aquaculture farms to help boost the country's food production. This led to rapid mangrove-to-pond conversion, which eventually became the major cause of the country's mangrove cover decline. Between 1952-1987, 95% of all brackish water ponds were formerly mangrove forests and by 1988, mangrove forest cover dwindled by 270,000 hectares.<sup>21</sup> In 1994, mangrove cover was estimated to represent only a mere 24 – 30% of the 1920s extent.<sup>22</sup> Nearly 80% of loss in mangrove extent can be attributed to human activities, such as land conversion to aquacultural fishponds, development of human settlements along coasts, and harvesting of timber.<sup>23</sup> Table 2 below summarizes drivers of degradation to mangrove ecosystems in the Philippines.

The Revised Forestry Code (Presidential Decree 705 of 1975) declared that a 20m strip of mangrove forest along shorelines facing any body of water should be retained for coastal protection. However, mangrove areas outside of this strip that are suitable for aquaculture may be developed for this purpose by issuing Fishpond Lease Agreements (FLA). This historical approach to mangrove protection provides a legacy of challenges for conservation efforts today with fishponds a key driver of

<sup>17</sup> Samson MS and Rollon R. 2008. [Growth Performance of Planted Mangroves in the Philippines: Revisiting Forest Management Strategies](#)

<sup>18</sup> Global Mangrove Watch Website

<sup>19</sup> The Global Mangrove Alliance. 2021. [The State of the World's Mangroves](#).

<sup>20</sup> DENR. 2018. National State of the Oceans and Coast.

<sup>21</sup> Ferrer et al. 2011. [Reversion of Disused Fishpond Lease Agreement Areas to Mangrove Forests in Region VI, Philippines](#)

<sup>22</sup> Primavera J. 2000. [Development and conservation of Philippine mangroves: institutional issues](#)

<sup>23</sup> *Ibid*, 11

deforestation. While the Philippine Fisheries Code of 1998<sup>24</sup> officially bans the conversion of mangrove forests to fishponds, unregulated and illegal cutting of mangrove forests persists today due to a lack of strict law enforcement. Land use change remains a critical driver of mangrove forest loss and degradation. The Department of Agriculture-Bureau of Fisheries and Aquatic Resources (BFAR) enforces the Fisheries Code.

Consumptive Threats	Non-Consumptive Threats
<b>Harvesting of mangroves for:</b> <ul style="list-style-type: none"> <li>• Timber</li> <li>• Fuel (e.g. charcoal and firewood)</li> <li>• Tannins</li> </ul>	Conversion to aquaculture ponds
	Land reclamation for different industries (e.g. tourism, human settlements, etc.)
	Conversion to agriculture land
	Land-based pollution

**Table 2.** A summary of consumptive and non-consumptive threats to mangrove ecosystems in the Philippines

In response to growing recognition of the importance of mangroves for coastal resilience and disaster risk reduction, there have been national mangrove restoration attempts over the last two decades, including government projects like the National Greening Program (NGP) (2011-2028).<sup>25</sup> The Department of Environment and Natural Resources (DENR) implemented the NGP, which utilized data from National Mapping and Resource Information Authority (NAMRIA) to define the key areas for rehabilitation.<sup>26</sup> The DENR partners with Local Government Units (LGUs) or NGOs to meet its reforestation targets. However, the NGP has faced implementation and durability challenges around restoration efforts, with certain target sites in Mindanao and the Visayas reporting minimal survival rates due to factors such as poor site selection, the planting of inappropriate mangrove species, failure to address underlying drivers of loss, and ecologically unviable methods of planting.

Early failures and viability challenges in mangrove restoration have been a global issue, and methodologies have improved over the years. In the Philippines, based on the lessons learned from the early days of the NGP, the DENR published a guide for community-based mangrove rehabilitation manual (2015) to promote proper reforestation techniques and improve the survival rates of restoration projects.<sup>27</sup> The DENR has promoted and implemented these guidelines and seen positive results, highlighted by Secretary Gina Lopez at the UNFCCC COP22 in Marrakech when she shared the story of “how a couple had been saved from the storm surge brought about by super typhoon Yolanda by clinging to mangrove stands in front of their house in Brgy. Rawis, Anibong, Tacloban City.”<sup>28</sup>

In 2023, an international consortium of practitioners, NGOs, and scientists in the Global Mangrove Alliance produced a global *Best Practice Guidelines for Mangrove Restoration*. The Guidelines serve as a blueprint for the effective conservation and restoration of mangroves in an equitable, science-based way. The new guidelines highlight the Philippines as an example of where socioeconomic constraints

<sup>24</sup> Republic Act 10654. 1998. [The Philippine Fisheries Code of 1998](#).

<sup>25</sup> DENR. [National Greening Program as of August 2020](#)

<sup>26</sup> Philippine Institute for Development Studies. 2013. [Assessment of the Efficiency and Effectiveness of the Reforestation Program of the Department of Environment and Natural Resources](#)

<sup>27</sup> DENR. 2015. [DENR Recommends Vol. 5 - Guidelines for community-based rehabilitation of mangroves](#).

<sup>28</sup> Philippines, Department of Environment and Natural Resources. [Mangrove Restoration](#). <https://ncr.denr.gov.ph/?layout=edit&id=530>

are also a factor in restoration challenges, such as funding limitations and timeframes putting pressure on a project to deliver quick results to the detriment of long-term project sustainability.<sup>29</sup>

As of 2017, the National Forest Definition categorizes mangroves as forests: *“Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use. This includes closed forest, open forest, and mangrove forests”* (2017 Philippine National REDD+ Strategy).<sup>30</sup> Given this, mangrove forests are also under the jurisdiction of the Forest Management Bureau (FMB) of the DENR. For the Philippines, mangrove forests specifically are defined as, *“forested wetland growing along tidal mudflats and along shallow water; coastal areas extending inland along rivers, streams and their tributaries where the water is generally brackish and composed mainly of Rhizophora, Bruguiera, Ceriops, Avicenia, Aegiceras, and Nipa species,”* and are part of the Philippine National Forest Reference Level.

In 2017, the DENR reported that the country’s total mangrove cover has rebounded to 303,373 ha based on satellite imagery from NAMRIA (DENR-NAMRIA, 2017). DENR partially attributed this improvement to its country-wide restoration efforts. However, the land cover data needs additional ground truthing and validation because different remote sensing methodologies can classify mangrove cover differently. For example, TerraPulse, a cloud-based platform for monitoring forest cover and change used for producing forest activity data, generally misses mangrove forests because the presence of water occasionally classifies it incorrectly. On the other hand, the NAMRIA land cover data tends to

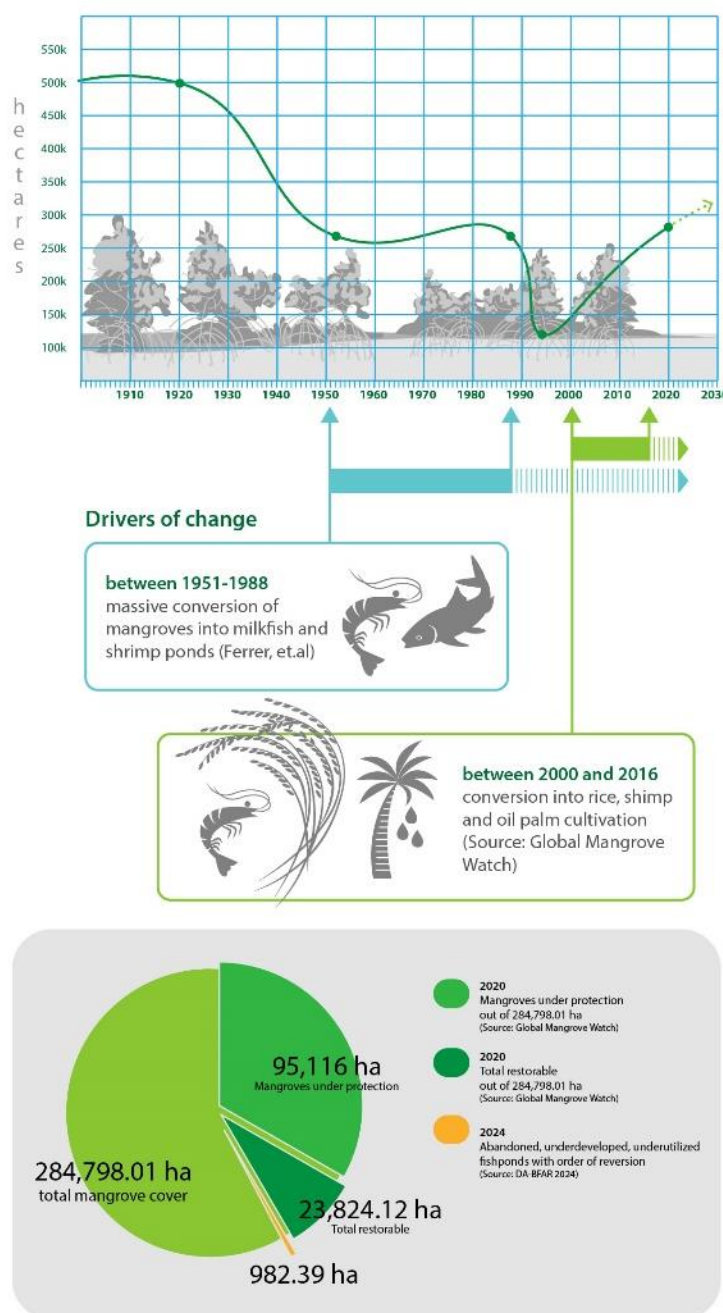


Figure 2. The infographic demonstrates land use change for mangrove area in the Philippines over time. Illustration by: Eric Guitterez, Rare

<sup>29</sup> Beeston, M. et al. (Editors) 2023. Best practice guidelines for mangrove restoration. [https://www.mangrovealliance.org/wp-content/uploads/2023/10/Best-Practice-Guidelines-for-Mangrove-Restoration\\_v4.pdf](https://www.mangrovealliance.org/wp-content/uploads/2023/10/Best-Practice-Guidelines-for-Mangrove-Restoration_v4.pdf)

<sup>30</sup> DENR. 2022. [Philippines Forest Reference Level under the UNFCCC REDD+ Framework, Republic of the Philippines.](#)

generalize the whole area as mangroves, even where there is degradation or patches.<sup>31</sup> Standard map-making procedures by NAMRIA thus usually require a technical team to be deployed in the field for ground truthing and validation. However, this procedure is not always followed with country-wide maps due to logistical constraints in covering the entire archipelago. The NAMRIA maps presented in this study have yet to be validated on the ground.



**Figure 3.** Regional distribution of mangrove forests as shown by the green outline along the coasts of the archipelago. Image source: Global Mangrove Watch.

The Global Mangrove Watch, an online mangrove monitoring platform, reports that in 2020, the total Philippines mangrove cover was at 284,798 ha<sup>32</sup>, which is spread along approximately a third of the 36,289 km of the country's coastline. The data also reports 34 mangrove species inventoried in the country (down from 42 reported in 2011), with one species reported as endangered (*Camptostemon philippinense*), one species as vulnerable (*Avicennia rumphiana*), and two species as near threatened (*Aegiceras floridum*, *Sonneratia ovata*) under the IUCN Red List. The image below shows the geographic distribution of mangrove forests throughout the Philippines and their prevalence in certain regions such as Palawan, the Visayas Islands, and Mindanao.

In 2023, DENR partnered with the Philippine Space Agency (PhilSA) to launch the 2023 Mangrove Mapping App which utilizes citizen science in validating the country's remotely sensed mangrove

maps. The validation period is expected to end in the 2<sup>nd</sup> quarter of 2024. During the 3<sup>rd</sup> National Technical Working Group Workshop on the updating of the National State of the Coast Report in April 2024, the agency also announced its initiative to use machine learning in data validation which is expected to lessen the number of sites required for ground truthing and hasten the process of creating reliable and transparent data.

<sup>31</sup> Climate Change Commission. December 2022. [Philippines Forest Reference Level under the UNFCCC REDD+ Framework](#).

<sup>32</sup> Note: These values align with are also reported by the State of the World's Mangroves 2022 (Leal, Maricé and Spalding, Mark D (editors), [2022 The State of the World's Mangroves](#). Global Mangrove Alliance.)



## 2.2. Seagrass Ecosystems: trends and pressures

The Philippines is known to have the most biodiverse seagrass meadows in Southeast Asia, with nineteen species recorded in the country (Table 1) spanning an estimated 2,726,220 ha.<sup>33</sup> Ecologically, seagrasses have very high productivity and serve as a food source, breeding ground, and shelter for many marine organisms in their various life stages, including the threatened *Dugong dugon*, which relies on seagrass for nearly 95% of its diet. Rabbit fishes, locally known as *Danggit* or *Kitong* are one of the commercially important fish species (especially for artisanal fisheries) found in seagrass meadows. Traditionally, coastal communities harvest seagrasses for fertilizers, woven baskets, roof thatches, and material to build dikes. Seagrasses also support critical ecosystem services. For example, they absorb nutrients from coastal run-off helping to keep the water clear and provide water filtration services in addition to storm surge protection, similar to mangroves.



Figure 4. One of the common species of rabbit fish (*Siganus guttatus*) found in Philippine seagrass meadows. Image source: BioLib

A 2018 study reported that seagrass beds were estimated to cover 2,726,220 ha<sup>34</sup> of the Philippine coastline, covering around 24% of the country's territorial waters. More recent values from NAMRIA in 2017 report of a decrease with only 489,006 ha total seagrass cover<sup>35</sup>. It is noteworthy that nationwide assessments are not done as frequently compared to other coastal resources such as corals, mangroves, and reef fishes. Such studies frequently cover only smaller, local scales. Data availability for seagrass extent at a national level is largely scattered and inconclusive and cannot provide the needed knowledge to sustainably manage and protect the country's seagrass resources. However, there are current NAMRIA initiatives, in collaboration with DENR and the PhilSA, to map the country's seagrass ecosystem utilizing more advanced remote sensing technology. This data has not yet become available.

*Cymodocea serrulata* (CS)



- Linear strap-like leaves 5-9 wide
- Serrated leaf tip
- Leaf sheath in broadly triangular with a narrow base
- Leaf scar do not form continuous ring around the stem
- Found on shallow subtidal reef flats and sand banks

*Enhalus acoroides* (EA)



- Very long ribbon-like leaves 30-150 cm long
- Leave with inrolled leaf margins
- Thick rhizome with long black bristle and cord-like roots
- Found on shallow/inertial sand/mud banks (often adjacent to mangroves forests)

Figure 5. Select seagrass species; 2 of 19 found in the Philippines. Photo source: [Philippines Field Guide on Seagrass](#). BFAR, FishCORAL Project - Region V.

<sup>33</sup> Fortes MD et al. 2018. [Seagrass in Southeast Asia: a review of status and knowledge gaps, and a road map for conservation](#).

<sup>34</sup> *ibid*, 28

<sup>35</sup> DENR. 2018. National State of Oceans and Coast.

Seagrass meadows are rapidly decreasing in range globally, as well as in the Philippines. According to a 2012 study, almost 50% of the country's seagrass beds had been lost with the most significant drivers of degradation identified as habitat destruction, sewage pollution, industrial pollution, fisheries overexploitation, and siltation.<sup>36</sup> (Table 3). Habitat destruction and siltation were identified as some of the highest-impact drivers of degradation of seagrass ecosystems, which occurs when forests or mangrove are lost and degraded, thus increasing rates of siltation and coastal erosion.

Problem	Immediate	Short-term	Long-term
Habitat destruction***	1	1	1
Sewage pollution***	2	2	3
Industrial pollution***	3	3	2
Fisheries overexploitation***	4	4	6
Siltation***	5	5	4
Oil pollution**	6	6	8
Hazardous waste*	7	7	7
Agricultural pollution**	8	8	5
Red tides*	9	9	11
Coastal erosion*	10	10	10
Natural hazards*	11	12	12
Sea level rise*	12	11	9

**Table 3.** Seagrass stressors showing habitat destruction, sewage and industrial pollution, and fisheries overexploitation as the primary drivers of seagrass loss in the Philippines.<sup>37</sup>

In response to the documented stressors driving the decline of seagrass ecosystems in the Philippines, the Bureau of Fisheries and Aquatic Resources identified several measures to serve as a guide for both national government offices and local government units in addressing these issues:

1. Stricter implementation on the disposal of sewage treatment water to coastal areas and improvement of sewage treatment plants and septic systems
2. Creating boat restriction zones to help protect seagrass meadows from disturbance (e.g. propeller scarring)
3. Intensify education campaigns in coastal communities and key stakeholders – including the tourism sector.

<sup>36</sup> Fortes MD, 2012. [Historical review of seagrass research in the Philippines.](#)

<sup>37</sup> *ibid*, 32.

Seagrass meadows in the Philippines are generally not considered a protected resource unless found within an MPA. Unlike mangroves, no protected areas are declared solely for the conservation of seagrass meadows, making them highly vulnerable to disturbance. In many instances, poorly planned mangrove rehabilitation initiatives have resulted in planting in seagrass beds, resulting in the disturbance in the seagrass ecosystem and the low survival rates of the planted propagules. Seagrass meadows are also often left out during the preparation of coastal management plans as their values and functions are not as well recognized as the other resources, such as corals and mangroves.

Seagrass ecosystems are, without a doubt, one of the most overlooked marine resources in the Philippines. This gap has led to decades of ecosystem decline, misuse, and underappreciation of this resource. With this said, there needs to be an urgency for the government to address this gap and ensure that any framework created for biodiversity conservation includes the conservation and sustainable use of this valued blue carbon ecosystem.

### 2.3 Coral Reef Ecosystems: trends and pressures

The Philippines has the second largest area of coral reefs in Southeast Asia, with an estimated area of 2,600,000 ha, housing approximately 500 species of reef-building corals (12 of which are considered endemic species) and 3,053 species of marine fishes. The Philippines has been considered the “center of the center” of marine shorefish biodiversity, with the highest number of endemism and diversity of invertebrate and fish species globally,<sup>38</sup> and at the apex of the Coral Triangle.

Although coral reefs do not sequester carbon dioxide and thus are not considered a blue carbon ecosystem, an intact and healthy reef is crucial for strengthening coastal resilience, the integrity of fisheries, and connectivity with other coastal ecosystems. Reefs help reduce wave energy and protect coastal communities during typhoons and storm surges.<sup>39</sup> Connectivity studies have also revealed a range of cross-ecosystem interactions where coral reefs provide favorable conditions for the maintenance of its adjacent ecosystems, such as mangrove forests and seagrass beds,<sup>40</sup> and could be considered “blue carbon adjacent” in this regard. Coral reefs contribute to approximately 70,000 Php per hectare worth of ecosystem services annually to the Philippines GDP.<sup>41</sup>

Despite the numerous benefits to society, coral reefs in the Philippines are also one of the most threatened ecosystems. Reef degradation has been documented since the 1970s, and this downward trend continues to this day. The first nationwide coral reef



**Figure 6.** The 51-hectare reclamation project in Coron Palawan during the reclamation operation (top) and the same site before the project operation (bottom). Image source: Palawan News.

<sup>38</sup> Carpenter, KE and Springer, VG. 2005. [The center of the center of marine shore fish biodiversity: the Philippine Island](#)

<sup>39</sup> Ferrario et al. 2014. [The effectiveness of coral reefs for coastal hazard risk reduction and adaptation.](#)

<sup>40</sup> Earp et al. 2018. [For a World Without Boundaries: Connectivity Between Marine Tropical Ecosystems in Times of Change](#)

<sup>41</sup> Republic of the Philippines. 2023. Philippine National Adaptation Plan (NAP) 2023-2050.

assessment in 1979 reported 30% of the country's reefs had more than 50% coral cover.<sup>42</sup> Since coral cover is a standard metric for reef health, it is monitored regularly, albeit mostly done at smaller spatial scales. The most recent nationwide assessment monitored more than 600 reefs throughout the Philippines in 2014. The result revealed a continuous decline of reef cover and quality, only 10% of the reefs had 50% coral cover.<sup>43</sup> There is no directive for any government institution to regularly monitor the country-wide coral cover. Thus, national coral cover data is published sporadically (data was published during the years 1981, 2000, and 2017<sup>44</sup>). There are academic institutes that conduct regular studies on coral reefs such as the Marine Science Institute of UP-Diliman and the Br. Alfred Shields FSC Marine Station of the Dela Salle University, but these are usually in small, local scales.

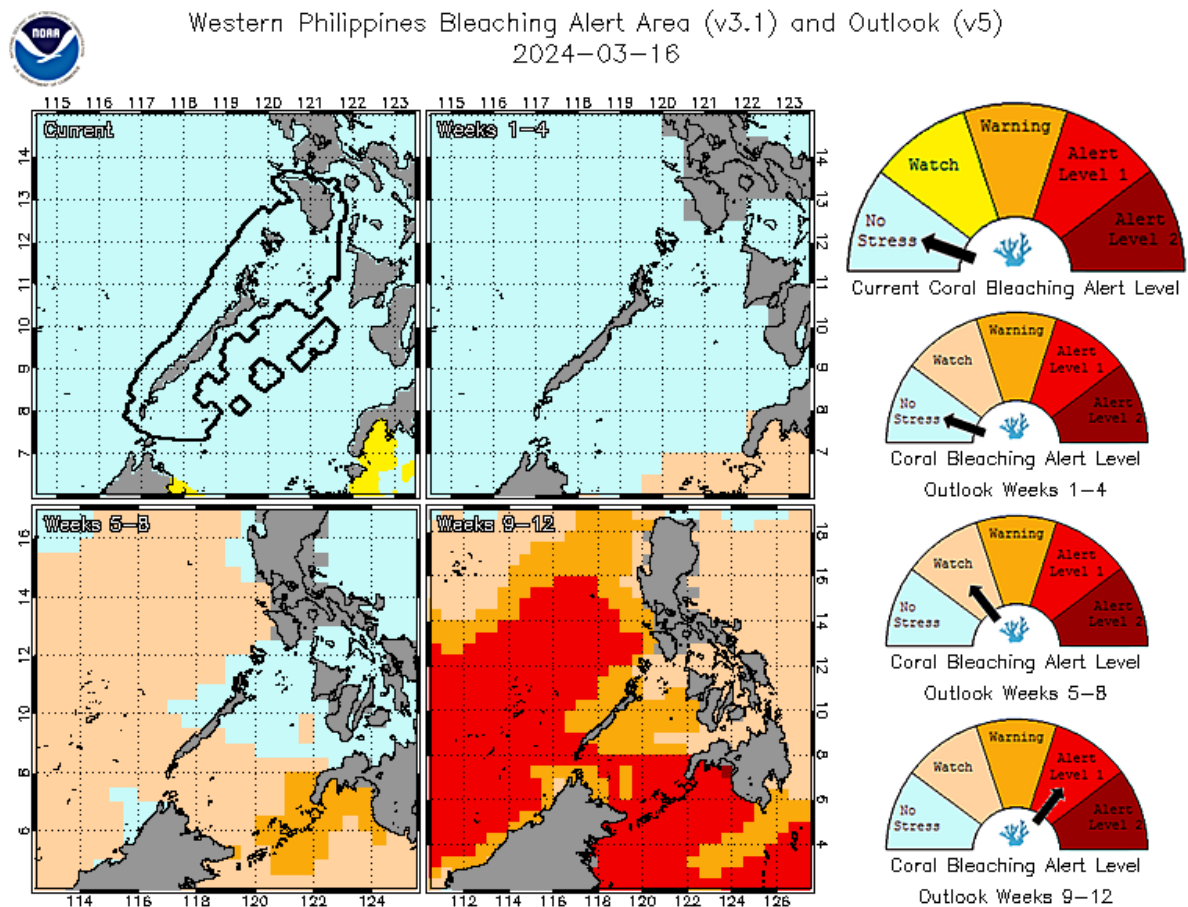


Figure 7. NOAA coral bleaching data and predictions showing how some parts of the country may be impacted in 2024 based from its 12-week outlook report (lower right corner). Image source: NOAA Satellite and Information Service.

The DENR lists habitat destruction and degradation as two of the most prevalent causes of biodiversity loss in country. Coral reefs are particularly concerned because of coastal developments and increasing amounts of land-based pollution that has degraded and destroyed many coral reefs and its associated ecosystems. Climate-induced sea surface warming has also resulted in mass coral mortality during the 1998 and 2010 El Niño Southern Oscillation (ENSO) events. The 1998 ENSO event, in particular, was

<sup>42</sup> Gomez ED and Alcalá CA. 1979. Status of the Philippine Coral Reefs.

<sup>43</sup> Licuanan et al. 2017. [Initial findings of the nationwide assessment of Philippine coral reefs.](#)

<sup>44</sup> Ibid 39



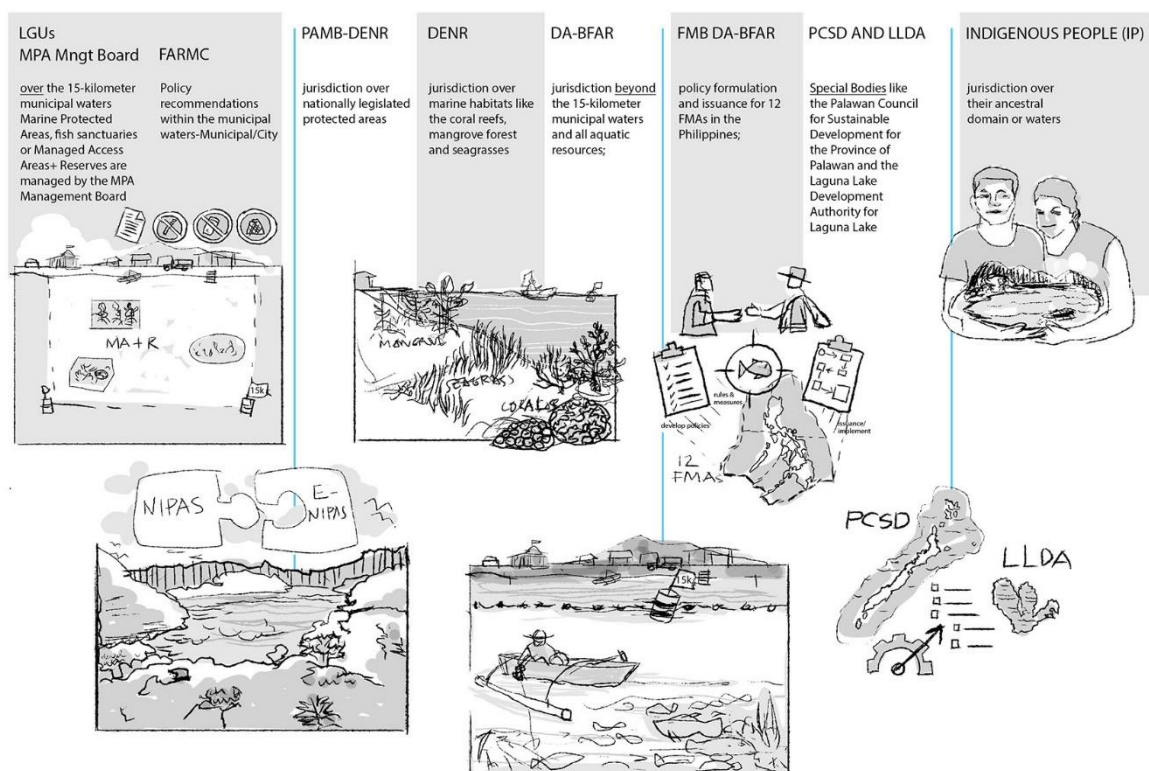
reported to cause a 46% reduction in coral reef cover<sup>45</sup> and 7.24 billion PhP of losses in the fisheries sector<sup>46</sup> and was considered as one of the most destructive ENSO events in the country.

The Philippine Atmospheric Geophysical and Astronomical Services Administration (Pagasa) has announced that the country will be experiencing another strong El Niño, its strongest effects are expected to be experienced from January to March 2024.<sup>47</sup> Recent data from NOAA reports that the entire archipelago is on a No Stress Alert as of March 16, 2024. However, predictions show that there is a 60% chance that the eastern seaboard of the country will be at Coral Bleaching Watch Status while certain areas in the western coast such as the Verde Island Passage and the western coast of Negros Island will be on Coral Bleaching Warning status in 12 weeks' time.

So far, no coral bleaching reports have been submitted to the Philippine Coral Bleaching Watch — a citizen science platform that monitors coral bleaching in the country.

## 2.4 Key Players and Stakeholders

Given the crosscutting nature and types of resource uses for coastal and marine ecosystems, a variety of relevant stakeholders are involved in the governance, management, and use of the ecosystems. This includes national government, local government, NGOs, fisheries associations, and other local coastal community groups.



**Figure 8.** The infographic demonstrates the multitude of governance levels and how they contribute or interact with coastal and marine ecosystems. Illustration by: Eric Guierrez, Rare

<sup>45</sup> Capili et al. 2005. [Climate Change Impacts and Adaptation on Philippine Coasts. Proceedings of the International Oceans 2005 Conference](#), Washington D.C.

<sup>46</sup> UNEP. 2000. [Reducing the Impacts of Environmental Emergencies: The Case of the 1997- 1998 El Niño Southern Oscillation](#)

<sup>47</sup> Philippine Information Agency. September 2023. [Strong El Niño looms in PH from late 2023 to first half of 2024.](#)

## National Government

The Philippines' coastal and marine ecosystems span jurisdictions primarily across two national agencies: Department of Environment and Natural Resources and the Department of Agriculture's Bureau of Fisheries and Aquatic Resources. Other agencies are also supporting or responsible for specific items relevant to blue carbon and coastal ecosystems, like finance or agriculture.

**Department of Environment and Natural Resources (DENR)** is the primary government agency responsible for the country's natural resources' conservation, management, development, and proper use. DENR is the institution tasked with creating the inventory system for the country's coastal and marine resources and implementing projects for its conservation and sustainable use. The agency comprises several bureaus tasked to manage the country's diverse natural resources.

- Biodiversity Management Bureau (BMB) - The primary bureau involved in biodiversity conservation. It is responsible for the establishment and management of the National Integrated Protected Area System (NIPAS).
- Environmental Management Bureau (EMB) - Tasked with the restoration, protection, and enhancement of environmental quality to preserve environmental integrity, public health and economic growth. EMB is responsible for conducting environmental impact assessments - required for infrastructure development.
- Ecosystems Research and Development Bureau (ERDB)- The research and development arm responsible for the development of biodiversity assessments protocols. ERBD also conducts research activities and provides technical assistance to other bureaus.
- Forestry Management Bureau (FMB) – Provides technical guidance for effective protection, development, and conservation of forest areas, including mangrove forests.
- Land Management Bureau (LMB) – Responsible for land surveys and classifications.

**Department of Agriculture (DA).** Responsible for all agriculture-related activities on land and sea, and includes the primarily fisheries-related bureau as noted below:

- Bureau of Fisheries and Aquatic Resource (BFAR) is responsible for developing, improving, managing, and conserving the country's fisheries resources<sup>48</sup>. Mangroves and other swamp areas that are not declared as forest lands fall under BFAR jurisdiction. The bureau's mandate includes the issuing of fishpond lease agreements for mangrove areas suitable for aquaculture use and the management of all fishery resources under this jurisdiction. BFAR also conducts habitat assessments of coastal ecosystems and establishes aquasilviculture farms in select coastal communities. The bureau used to conduct mangrove rehabilitation projects in the past, but this initiative has now devolved to the LGUs.
- National Fisheries Resource and Development Institute is the fisheries research arm of the DA.

**Department of Finance (DOF).** Responsible for the government's sound fiscal policy and aims to accelerate economic growth and stability, while balancing growth with productivity. The consideration of establishing a carbon credit or pricing instrument in the Philippines is held with the DOF. Further, it

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<sup>48</sup> RA 10654, SEC. 2. Declaration of Policy.–It is hereby declared the policy of the State: a. to achieve food security as the overriding consideration in the utilization, management, development, conservation and protection of fishery resources in order to provide the food needs of the population. A flexible policy towards the attainment of food security shall be adopted in response to changes in demographic trends for fish, emerging trends in the trade of fish and other aquatic products in domestic and international markets, and the law of supply and demand;

supervises the revenue operations of the LGUs, who are responsible for local allocation of conservation and restoration resources.

**Department of Tourism (DOT).** Tourism is a major force in the Philippine blue economy, with approximately 80% of tourism activities in coastal areas, thus one of the key drivers of a sustainable blue economy.

**Department of Science and Technology (DOST).** The DOST is the primary agency for developing and utilizing technologies for national development. Responsible for the government's scientific and technological activities; as well as formulating policies, programs, and projects to support national development, which will be critical for blue carbon and marine conservation decisions and activities.

**Climate Change Commission** is the lead policy-making body that aims to coordinate, monitor, and evaluate government programs around climate change at a national, local and sectoral level. The intent is to build and enhance climate resilience together with a sustainable economy and is the lead agency to develop the National Climate change Action Plan, National GHG Inventory, and the Nationally Determined Contribution.

**The Bangko Sentral ng Pilipinas (BSP)** is the central bank and monetary authority in the Philippines. In 2020, the BSP signed the Sustainable Finance Framework, and issued BSP Circular No. 1085, which requires banks to offer sustainable finance products to support economic growth and provide lasting benefits for both clients and society while reducing pressures on the environment.

**National Economic and Development Authority (NEDA)** is a government agency responsible for economic development and planning. The Philippine Statistics Authority is an NEDA attached agency responsible for data collection and consolidation of national accounts. The proposed "Blue Economy Act" would give NEDA the mandate to develop a blue economy framework, including determining how actions would be aligned with the Philippine Development Plan.

### Sub-National Government

In 2019, DA-BFAR implemented Fisheries Administrative Order No. 263 which established the 12 fisheries management areas (FMA) in the country. This order gave authority to each FMA to set-up its own multi-sectoral governance body for collectively managing fishing areas within these boundaries<sup>49</sup>. The 12 FMAs were established based on the range and distribution of fisheries and stocks boundary. Details about the management of FMAs will be discussed in the Strategy and Policy Section.

Another sub-national government example that plays significant role in managing and protecting critical coastal ecosystems is the Palawan Council for Sustainable Development (PCSD). The 1992 Strategic Environmental Plan for Palawan (PCSD) or Republic Act 7611, ensures the province's fragile environment is protected, conserved, utilized, and managed effectively. The PCSD sets out the framework for public and private sectors in terms of conservation and development planning and policy formulation, as well as regulating the entry of development projects in the province of Palawan.

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<sup>49</sup> Oceana. 2019. Establishment of Fisheries Management Areas (FMA) in the [Philippines](#)

## Local Government

By virtue of RA 7160 or the Local Government Code of 1991, powers and functions were decentralized to local government units, from the provincial government to municipal and city government until the barangay level. It also gives authority to the local government units to mobilize funds to develop and protect its terrestrial and marine resources. Coastal LGUs, in this case, are responsible for the management of Locally Managed Marine Protected Areas (LMMPA) within their jurisdiction. Based on the DILG list in 2023, there are 81 provinces, 144 cities, 1490 municipalities, of which 940 are coastal municipalities and 42,028 barangays.

LGUs aim to provide a responsive and accountable governance structure, including on the sustainable management of the municipality's natural resources and development. LGUs can also form alliances or partnerships with each other. One example of a learning exchange between LGUs is via networks like the [Coastal 500](#), a global network of mayors and local government leaders committed to work towards thriving and prosperous coastal communities, demonstrate the importance of local leadership. The Philippines has over 30 mayors involved in the Coastal 500.<sup>50</sup>

The Fisheries Code of the Philippines also institutionalized the formation of Municipal/City/Integrated Fisheries and Aquatic Resources Management Council as a policy recommending body to LGUs. The council is composed of fisherfolk organizations/cooperatives, NGOs, the academe, and other stakeholders in the locality involved in the fisheries sector. This co-management structure enables the active participation of stakeholders, particularly the municipal fisherfolk, in the development and implementation of policies that involve their livelihood.

## Civil Society

Non-government organizations (NGOs) and civil society are key stakeholders often providing technical guidance and implementation of projects focused on ecosystem rehabilitation and establishments of protected areas. Often projects led by NGOs are in partnership with the national government, local government and other civic groups. Additionally, the Global Mangrove Alliance, a network of NGOs working to protect and restore mangrove forests globally, has a Philippines National Chapter to further support the implementation of mangrove projects in the country. The GMA National Chapter is comprised of Conservation International, Wetlands International, WWF, Rare Philippines, Zoological Society of London, and Forest Foundation Philippines. These NGOs also have ongoing mangrove conservation projects, and the formation alliance was done for stakeholders to get a better perspective of the current status of mangrove rehabilitation and streamline future initiatives in the country. A list of recent mangrove restoration projects in the Philippines can be found in Table 11.

There are also local NGOs that have mangrove reforestation efforts. Among them are the Institute of Social Order that partnered with LGUs in the Municipality of Siruma and the rest of San Miguel Bay in the Province of Camarines Sur and Camarines Norte and the Tambuyog Development Center in Lamon Bay and Tayabas Bay in the Province of Quezon. Additionally, People's Organizations and Fisherfolk Associations are also working on mangrove restoration efforts, for example in Zamboanga Sibugay.

## International Partnerships

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<sup>50</sup> Coastal 500. <https://www.coastal500.org/team>



The Philippines government is a member of a number of international and regional partnerships that focus on different aspects of coastal and marine conservation or management. Select examples include The Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF), World Economic Forum's Blue Carbon Action Partnership (WEF-BCAP), The Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), NDC Partnership, the Global Ocean Alliance, and more. Details of each partnership and the Philippines' role in it is described in Section 5.3 Crosscutting.

## 2.5 Government Policies and Initiatives

With increased global attention to the importance of coastal wetland ecosystems for climate mitigation, adaptation, sustainable development, fisheries, food security, and local livelihoods, the Philippines is no exception in its supporting relevant policies and governance structures.

For example, there are different levels of governance for biodiversity protection. Under NIPAS (1992), the government can declare protected areas where the DENR BMB oversee related management. In 2018, the NIPAS regulation was revised with the Expanded NIPAS (E-NIPAS)<sup>51</sup> and supports implementation of the Protected Area Management Plans including work programs, budget, and staff.



**Figure 9.** The Del Carmen Mangrove Reserve in Siargao Island Protected Landscape and Seascape (SIPLAS). Image source: Erwin M. Mascariñas, [www.visitdelcarmen.com](http://www.visitdelcarmen.com).

All Protected Areas under NIPAS/E-NIPAS cover an estimated area of 7,762,959ha, of which 3,080,577ha are marine ecosystems (38% of the total PA area)<sup>52</sup>.

LMMPAs, supervised by the LGUs, are institutionalized through the proclamation of local ordinances. LMMPA's are run by an MPA management board that oversees the operation, enforcement and sustainability of the marine sanctuary runs the LMMPAs. As of 2014, more than 1,800 LMMPAs operate in the country.<sup>53</sup> However, not all established marine sanctuaries are fully functional and effective. In 2012, the Philippines established over 1,200, but most were considered "paper parks" where protection and enforcement were not strictly implemented. This has contributed to the declining status of MPAs across the Philippines.<sup>54</sup> There are good examples of effective LMMPAs that successfully manage their protected areas sustainably. One example is the Del Carmen Mangrove Reserve in Siargao

<sup>51</sup> Note: Each protected area is managed by a Protected Area Management Board (PAMB) which are composed of the Regional Executive Director, and representatives from the regional government, the municipal government, the barangays covering the protected area, NGO/people's organizations, the Indigenous People's organization, and other agencies.

<sup>52</sup> Philippine Clearing House Mechanism. [Statistics and Trends of Philippine Biodiversity](#).

<sup>53</sup> Cabral et al., 2014. The Philippine marine protected area (MPA) database. **NOTE:** there are different numbers reported from various sources, but this source was recommended for use in the report as per personal communication from MSN secretariat.

<sup>54</sup> Horigue, et al. 2012. [Marine protected area networks in the Philippines: Trends and challenges for establishment and governance](#).

Island Protected Landscape and Seascape which covers 4,871 ha of continuous mangrove forest and is considered one of the largest locally-managed mangrove protected areas in the country (Fig. 9).

There are also instances where NIPAS protection are declared in areas with existing locally managed MPAs. In such cases, the governance of these LMMPAs should be turned over to DENR, and a co-management scheme between the LGUs should be implemented. However, many LGUs are often not open to sharing management power which often leads to conflict between the two bodies. It isn't also a conflict when LGUs align and coordinate to co-manage the area, for example Del Carmen inside of SIPLAS NIPAS area is a good example of effective co-management.

At an international level, the Philippines are viewed as champions and advocates for climate action, especially around the need to avert, minimize and address climate-induced loss & damage. Loss & Damage can include nature-based approaches and ecosystem-based adaptation such as through the protection of coastal and marine ecosystems. The Philippines is also a Party to the Ramsar Convention which is an international treaty for the conservation and sustainable utilization of wetlands. The Philippines houses eight Ramsar sites covering an estimated 247,684 ha of protected wetlands and forests. Five of the eight Ramsar sites established between 1994 and 2021 are protected for their extensive mangrove and seagrass ecosystems that serves as a habitat for many globally threatened and vulnerable species (Table 4).

There are also three sites in the Philippines that have been accepted as UNESCO Biosphere Reserves under the UNESCO World Heritage Convention that protects areas of cultural heritage significance ranging from historical, architectural, and natural sites. These are found in the provinces of Albay, Palawan, and Mindoro. The Palawan Biosphere Reserve, which was placed in the tentative list in 1990 has the largest remaining mangrove cover in the country covering 44,500 ha of mangrove forests.<sup>55</sup>

PROTECTED AREA SITE	AREA (HA.)	DESIGNATION DATE
<a href="#">Olanggo Wildlife Sanctuary</a> (Ramsar)	5,800	July 1, 1994
<a href="#">Puerto Princessa Subterranean River National Park</a> (Ramsar)	22,202	June 30, 2012
<a href="#">Las-Piñas-Parañaque Critical Habitat and Ecotourism Area</a> (Ramsar)	175	March 15, 2013
<a href="#">Negros Occidental Coastal Wetlands Conservation Area</a> (Ramsar)	89,607.8	October 20, 2016
<a href="#">Sasmuan Pampanga Coastal Wetlands</a> (Ramsar)	3,667.3	February 2, 2021
<a href="#">Tubbataha Reef Marine Park</a> (Ramsar/UNESCO WH) ** Coral reef only, no known seagrass	96,828	1993
Albay Biosphere Reserve (UNESCO BR)	250,000 ha of terrestrial and coastal areas	Placed in the list of UNESCO BRs in 2016
Palawan Biosphere Reserve (UNESCO BR)	44,500 ha of mangrove forests	Placed in the list of UNESCO BRs in 1990

<sup>55</sup> UNESCO website: Man and the Biosphere Programme: [Albay](#), [Palawan](#), and [Puerto Galera](#).

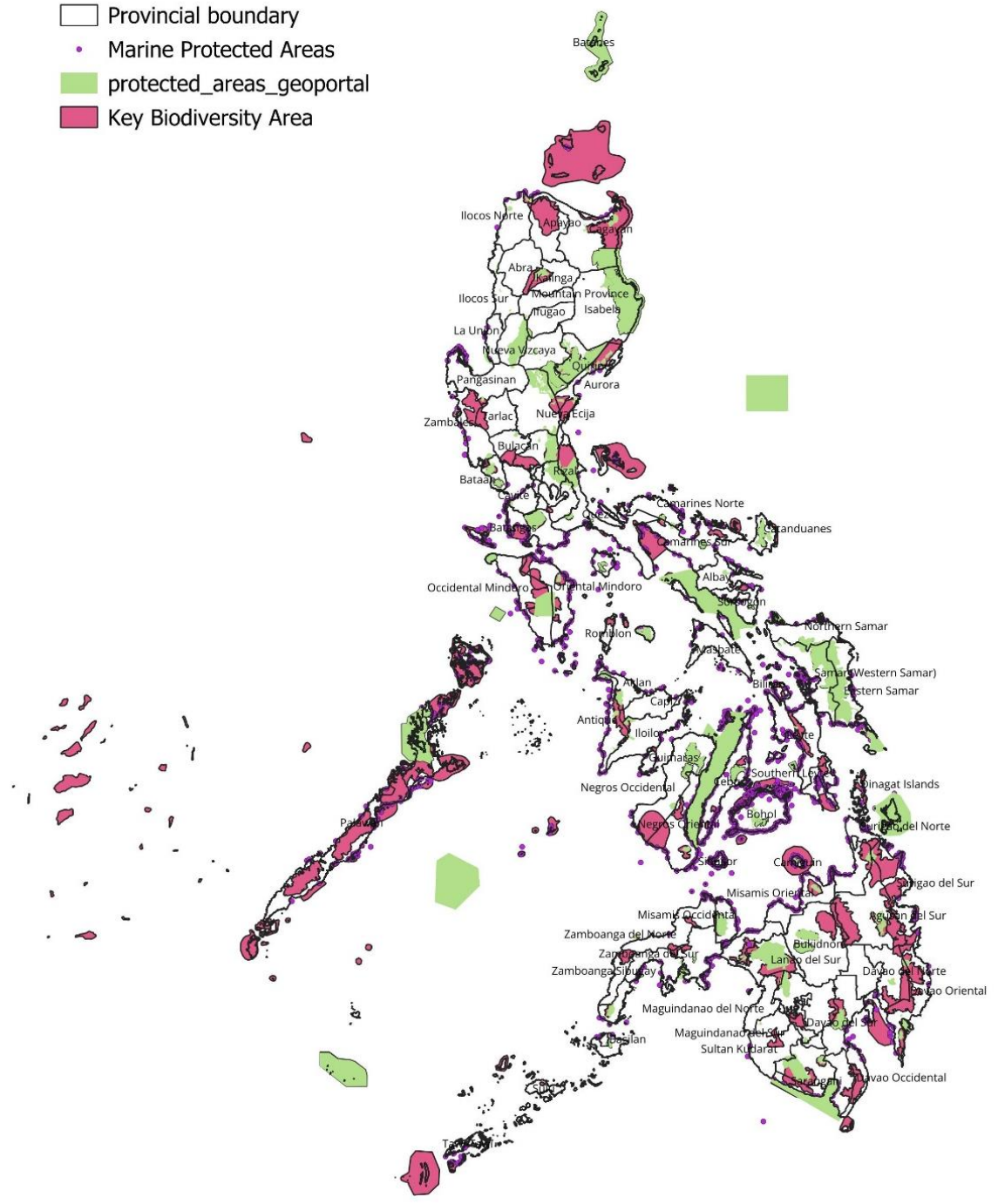
Puerto Galera Biosphere Reserve (UNESCO BR)	23,200 ha of terrestrial and coastal areas	Placed in the list of UNESCO BRs in 1977
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**Table 4.** List of internationally protected sites with mangrove and seagrass ecosystems through the Ramsar Sites Information Service and the UNESCO Marine World Heritage Sites.

Both Ramsar sites and UNESCO Biosphere Reserves are recognizing the value of these areas for climate mitigation and adaptation purposes. Addressing the biodiversity-climate nexus is a crosscutting issue, which can be represented at the National level in many ways.

**LEGEND:**

- Provincial boundary
- Marine Protected Areas
- protected\_areas\_geoportal
- Key Biodiversity Area



**Figure 10.** Map of the Philippines demonstrating relevant protected areas, including KBAs, LMMPAs, and Nationally legislated PAs (NIPAS and ENIPAS) based on the outcome of a March 2024 workshop on OECMs and how it contributes to protecting 30% of marine and coastal ecosystems by 2030 (30x30). Image by: Eric Guitterez, Rare

## Section 3: Knowledge Tools and Resources

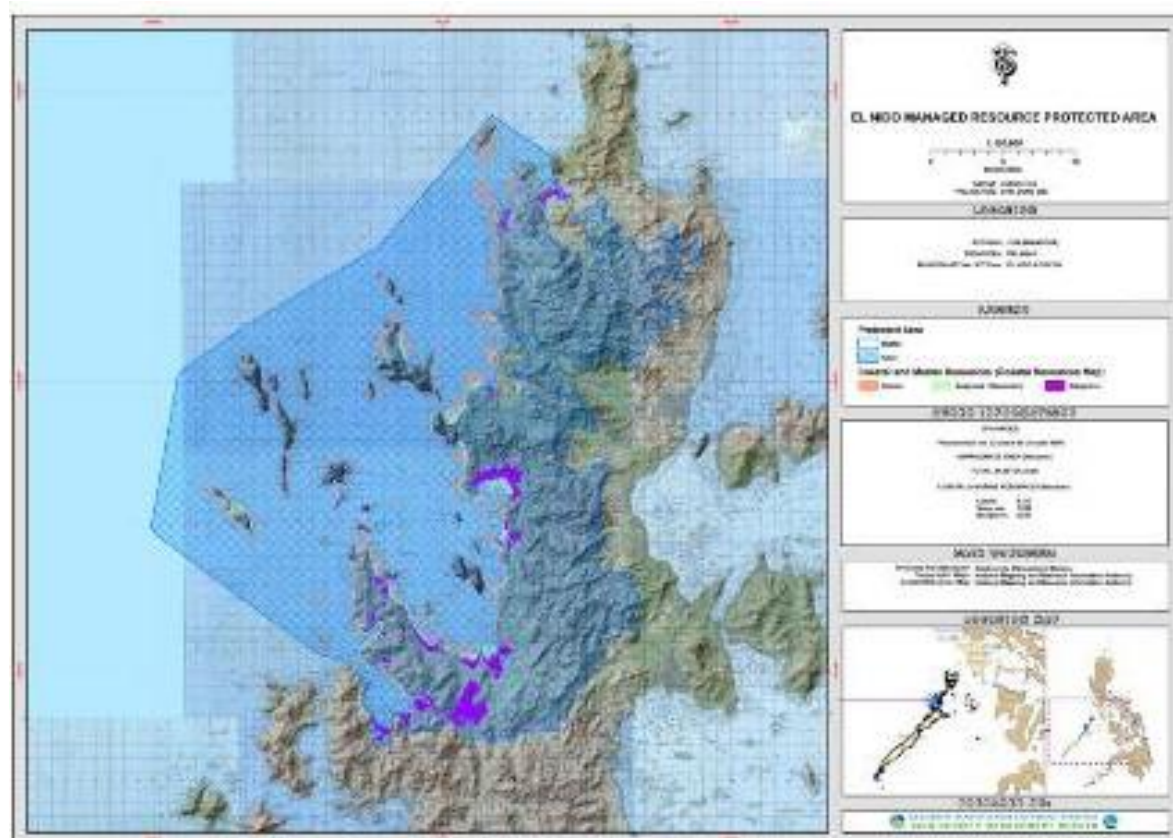
Scientists, government, and non-government organisations have conducted habitat assessments for marine and coastal ecosystems in the Philippines since the 1970's. However, it is recognized that initiatives have been heavily skewed towards the coral reefs and reef-associated organisms as this is the commonly used metric for assessing the health of coastal ecosystems. Resource assessments for mangrove and seagrass ecosystems are done less frequently and sporadically in the country. This section aims to outline all known programs and inventory systems used to monitor and assess the country's blue carbon ecosystems and identify gaps and opportunities based on the current set of tools and resources available to the government to aid blue carbon actions.

### 3.1. Inventory Systems

The list below are the government and non-government organisations that have conducted monitoring and inventory work on coastal ecosystems, GHG emissions and other monitoring work related to the Blue Carbon agenda in the Philippines:

## DENR, BFAR and NAMRIA

The NIPAS law gives DENR the mandate to monitor and inventory the resources of all the country's protected areas. Thus, data on habitat maps are easily available for these specific sites. Figure shows an example of a habitat map for the El Nido Resource Protected Area, showcasing its coral reef, mangrove, and seagrass resources.



**Figure 2.** Habitat map of the El Nido Resource Protected Area with the purple areas showing the extent of mangrove cover. Image source: Philippine Clearing House Mechanism.



The National Mapping and Resource Information Authority (NAMRIA) is the Philippine government's primary map-making agency and DENR's partner in the creation of coastal resource maps. NAMRIA generates land cover data every 5-7 years and generated the last three coastal resource maps during 2003, 2010, and 2015. Figure 4 shows a sample map published by the DENR and NAMRIA showing the latest map of coral, mangrove, and seagrass extent throughout the archipelago.<sup>56</sup> NAMRIA has updated its coastal resource map in 2020, which can be viewed through Geoportal.com — the agency's map-making portal. However, the satellite imagery has not been validated due to COVID restrictions implemented in the Philippines during 2020 and 2021.<sup>57</sup>

**Figure 3.** Coastal resource map published by DENR in 2017 from the 2015 mapping data. This is the most recent national coastal resource map given the disruptions in travel during the 2020 pandemic. Source: NAMRIA

<sup>56</sup> DENR. 2022. Philippines Forest Reference Level under the UNFCCC REDD+ Framework.

<sup>57</sup> Geoportal PH website: <https://www.geoportal.gov.ph/>

In February 2024, DENR partnered with the PhilSA) to launch a Nationwide Mangrove Map for 2023 using remote sensing via Sentinel-2 and ALOS PALSAR2 – a Japanese Synthetic Aperture Radar that is known to produce higher resolution images and wider swath width to improve mangrove resource mapping in the country. The images captured by this system is still yet to be validated, but will now include local DENR offices, NGOs and academe partners.<sup>58</sup> The 2023 Mangrove App was also launched which utilizes citizen science in validating mangrove resource maps. The validation period is expected to be finished in the 2nd quarter of 2024.

### **Climate Change Commission**

A national greenhouse gas inventory is one of the key activities stipulated in the National Climate Change Action Plan. This initiative was only institutionalised in 2014, but GHG inventory has actually been conducted in the country since 1994. The National GHG Inventories done during the years 2015 and 2020 is set to be completed, published, and made available to the public in 2024 and will be included in the country's first submission to the Biennial Update Report to the United Nations Framework Convention on Climate Change (UNFCCC).<sup>59</sup>

### **DOST Aquatic Resources Extraction from LiDAR Surveys (coastmap)**

Under DOST Phil-LiDAR 2 Project, the DOST in collaboration with state colleges and universities uses innovative technologies such as LiDAR and other remote-sensing and GIS technologies to generate high-resolution resource maps and resource vulnerability maps that provide detailed assessment of the country's natural resources such as high-value agricultural crops, coastal resources, forest, hydrological and renewable energy resources. This will help to formulate recommendations and address future local supply and demand in agriculture, coastal, forest, and renewable resources.

### **LGU/MPA Management Board of Locally Managed Marine Protected Areas**

As previously mentioned, national habitat maps have always been a huge logistical challenge for archipelagic countries like the Philippines. To address this problem, the government turned to increase the number of agencies involved in the endeavour to provide more updated, detailed, and on-the-ground information. The Local Government Code of 1992 allowed the decentralisation of the responsibilities of DENR and gave responsibility to the local government units to monitor, manage, and develop the resources within their jurisdiction. With this, LGUs are given the power to hire Environment and Natural Resource Officers (ENRO) to oversee this task. The LGUs were also given the authority to establish locally-managed MPAs and to monitor these areas according to their MPA management plans.

### **The MPA Support Network (MSN)**

MSN is another important institution that has supported the inventory systems of all types of marine protected areas in the Philippines. MSN is an organisation composed of academe, NGOs, and LGU partners that organise training and other activities related to MPA management. MSN works closely with DENR in various initiatives concerning MPAs, such as capacity-building workshops and establishing protocols for assessing MPA management effectiveness (e.g. MPA Management Effectivity Tool or MEAT). The organization founded the Para El Mar Awards, which is held biennially

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<sup>58</sup> Philippine Space Agency. March 4, 2024. PhilSA, DENR launch nationwide mangrove mapping initiative.

<sup>59</sup> [National Integrated Climate Change Database and Information Exchange System](#). Accessed: 01/31/24

and gives recognition to the best marine protected areas in the country. DENR has been a constant partner for this initiative since its inception.

MSN also serves as a data repository for Philippine MPAs and maintains a database/ interactive website where data such as habitat coverage, MPA evaluation scores, and other information pertaining to the management of marine protected areas can be found. (Fig. 13) Further the MSN Database is currently being updated and validated as of April 2024, with the LGUs providing coordinates and local ordinances confirming designations.

**Data Access:** For shapefile data, one must submit a [data request form](#) from the MSN website.



**Figure 4.** A screenshot of MSN's interactive website and data repository highlighting locations of LMMPA and NIPAs. Image source: <http://www.database.mpasupportnetwork.com/>

## USAID / Fish Right Program

USAID, in collaboration with the University of Rhode Island and Silliman University, initiated a coastal habitat mapping program under its Fish Right Program. Compared to the traditional remote USAID sensing methods, this platform makes use of drone imagery and allows for the creation of high-resolution shots to overlay the satellite images. Figure 13 shows an example of a habitat map of the Calauit Coastal Zone and the swipe tool that compares satellite imagery.<sup>60</sup>



**Figure 5** A sample showing the habitat map and coastal resources of the Calauit Coastal Zone. Image source: USAID.

## The Global Mangrove Watch Platform

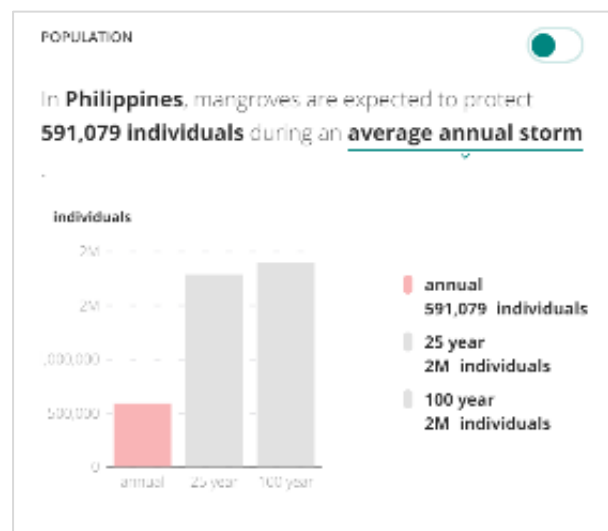
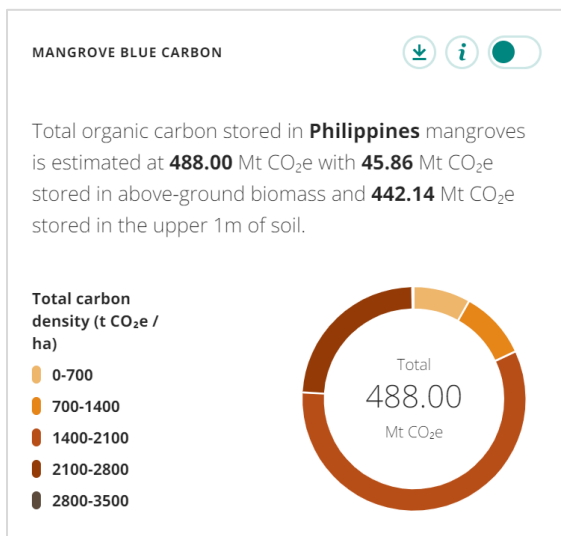
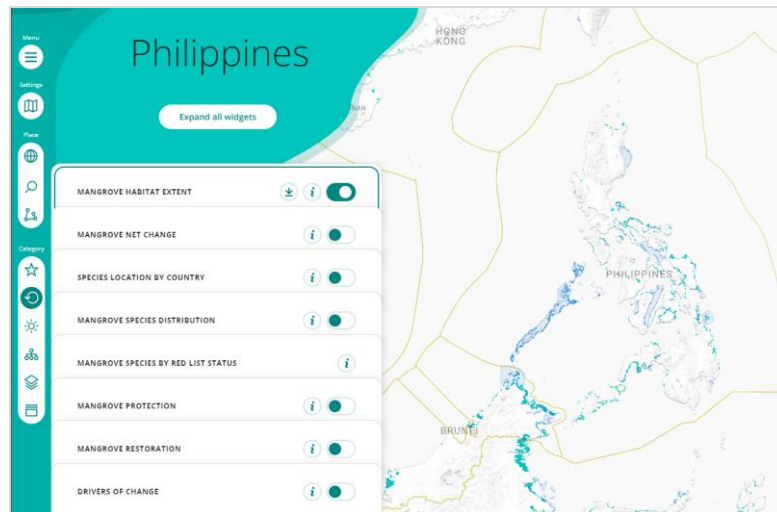
Global Mangrove Watch (GMW) is an online platform (<https://www.globalmangrovetwatch.org>) that provides remote sensing data and tools for monitoring mangroves. It gives universal access to near real-time information on where and what changes there are to mangroves worldwide and highlights why they are valuable. The GMW platform has hi-res data on land cover change (1996 – 2020), soil carbon, restoration potential, climate and policy contributions like mangrove blue carbon estimates and carbon market potential, and other ecosystem services like mangrove fisheries and coastal protection. The data can be analysed at a national level or sub-national/local, even with individually drawn areas. For each analysis, you can download a report with the relevant selected datasets.

Global Mangrove Watch informs the work of the Global Mangrove Alliance, and many of the GMA partners contribute their data to the GMW platform which was created with support from the Oak Foundation and DoB Ecology, Aberystwyth University, soloEO, The Nature Conservancy, and Wetlands International among others.

**Data Access:** The vector shapefiles are publicly accessible on the UNEP WCMC database as well as through the platform: <https://data.unep-wcmc.org/datasets/45>

<sup>60</sup> USAID. 2017. [Coastal Habitat Mapping of the Philippines](#).





**Figure 6.** Snapshots from Global Mangrove Watch platform and data repository. Two example widgets are shown: Climate & Policy's Mangrove Blue Carbon, and Ecosystem Service's Coastal Protection. The Restoration and Conservation category and related widgets are shown on the map.

## Academic Institutions

Academic institutions have contributed significantly to initiating and updating inventory systems of the country's marine and coastal resources. Assessments done by the academia are usually made possible through government or privately funded projects that vary in their objectives, and temporal/spatial scales. The top two institutions in the Philippines with the highest number of published work on blue carbon are the University of the Philippines – Diliman and the Ateneo de Manila University.

It is important to note that one of the bigger challenges after resource inventory is ensuring that people on the ground use these existing tools for practical application. This is especially difficult when agencies and LGUs lack the technical capacity to translate the data generated from this science into doable programs or use this as a basis for making informed management decisions.

## 3.2 National Frameworks and Plans

In 2021, the Philippines submitted its National Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC), which stated the country's commitment to undertake adaptation measures in its coastal and marine ecosystems and the biodiversity sector.<sup>61</sup> This required the alignment of the NDC to the country's National Development Plans, along with the policies and government strategies coming from its different agencies. The NDC is one example of a national framework with several entities involved in realizing this goal.

Coordinated and transparent institutional arrangements are crucial to ensure that plans are strategic and streamlined towards achieving these commitments. Using the NDC as the example, agencies partnering on implementation include institutions such as the Department of Energy, the Bangko Sentral ng Pilipinas, the Climate Change Commission, and the National Security Council. Table 5 shows other examples of national frameworks.

Another crosscutting example is the formulation and implementation of the Philippine Development Plan (PDP).<sup>62</sup> The PDP is the country's overall framework for development planning. It is updated every six years and the most recent iteration covers the years 2023-2028. Part of the strategy is to accelerate climate action and strengthen disaster resilience. This strategy includes programs to intensify ecosystem protection, rehabilitation, and management. Compared to the previous iterations of the PDP, this plan integrates greater consideration for ecosystem connectivity in the process of development planning. The conduct of carrying capacity assessments were also emphasized to guide management interventions in protected areas and ecotourism sites, which is very important in maintaining the ecosystem quality within these areas.

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<sup>61</sup> [Republic of the Philippines Nationally Determined Contribution Communicated to the UNFCCC on 15 April 2021.](#)

<sup>62</sup> Philippine Development Plan (2023 – 2028). <https://pdp.neda.gov.ph/philippine-development-plan-2023-2028/>

Framework and Strategy Plans	Purpose	Primary Implementing Agency	Period
<a href="#">National Climate Change Action Plan</a>	The NCCAP outlines the country's strategy to building the adaptive capacity of communities and increase the resilience of the country's natural resources to climate change.	DENR, Climate Change Commission	2011-2028
Nationally Determined Contribution	The NDC supports national development, poverty eradication, growth, energy security, and social and climate justice, and socio-economic sectors transformation towards a climate and disaster-resilient and low carbon economy	DENR, Climate Change Commission	Submitted 2021 For period: 2020 – 2030
Philippine Biodiversity Strategy and Action Plan	The PBSAP serves as the framework in conserving biodiversity to improve human well-being thus contributing to the PDP. (Revision in progress post-GBF)	DENR - BMB	Draft 2024 <sup>63</sup>
<a href="#">Philippine Development Plan</a>	The PDP outlines the objectives, strategies and programs that will be prioritized to promote social and economic transformation in the country as well as to accelerate climate action and to strengthen disaster resilience. (Revised every 6 years)	National Economic and Development Authority	2023-2028
<a href="#">Philippine National Security Policy</a>	One of the core national interests of the PNSC is Ecological Balance and Climate Change Resiliency and thus, highlights the need for the country to build resilience from climate-induced and geological hazards that destabilize socio-political and economic system	National Security Council	2023-2028
<a href="#">Philippine Energy Plan</a>	Energy blueprint supporting the government's long-term vision to chart a transformative direction in attaining a clean energy future. It takes into consideration the need for sound environmental management as an integral factor driving the energy sector's direction.	Department of Energy	2018-2040
<a href="#">Sustainable Finance Policy Framework</a>	This framework lays out the guidelines for local banks to support the country in its sustainability commitments and goals outlines in the Philippine Development Plan.	Banko Sentral ng Pilipinas	2021
Philippine National Adaptation Plan	The plan presents guidelines to facilitate mid-term and long-term adaptation planning with to goal of enhancing the adaptive capacities of communities and ecosystems.	Climate Change Commission	[In draft] 2023-2050
Comprehensive National Fisheries Industry Development Plan	The CNFIDP lists the priority projects for a six-year period for the development and management of the country's fisheries and aquaculture.	DA-BFAR	2021-2025
<a href="#">National Ecotourism Strategy and Action Plan</a>	Provides a roadmap to sustain the ecotourism market. It will support biodiversity conservation and help local communities to have another source of income without turning to unsustainable extraction activities	Department of Tourism (prepared by the National ecotourism steering committee)	2013 - 2022

**Table 5.** Overview of select national Framework and Strategy Plans for the Philippines

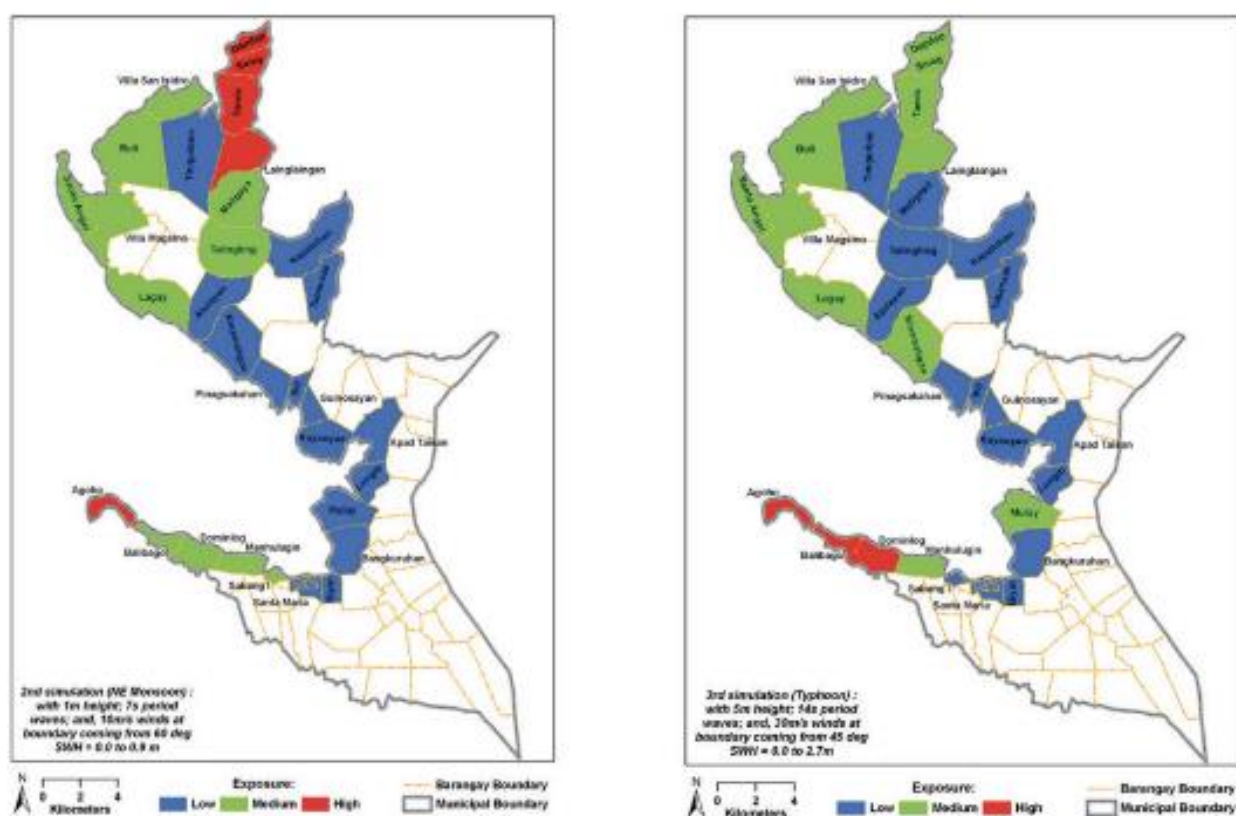
<sup>63</sup> PBSAP Assessment and Updating <https://www.philchm.ph/pbsap-assessment-and-updating/>

### 3.3. Vulnerability assessments

This section lists down organisations (government and non-government) that have done coastal vulnerability assessments in the Philippines.

#### Coral Triangle Initiative: Vulnerability Assessment Tools for Coastal Ecosystems

In 2008, the Coral Triangle Initiative partnered with USAID and UP Diliman-Marine Science Institute to develop vulnerability assessment tools for coastal systems to assist partners incorporate climate change impacts to their coastal resource management programs. The three-year project was able to train local partners in the assessment tool as well as generate coastal vulnerability maps for the country. Figure 16 is a sample vulnerability map of the town of Calauag, Quezon Province showing its different exposure degrees (low, medium, high) during the different monsoon seasons of the year.<sup>64</sup>



**Figure 7.** A vulnerability assessment map of coastal towns in Calauag, Quezon Province showing various exposure degrees during NE monsoon season (left) and a typhoon simulation (right). Image source: CTI.

#### Climate Change Vulnerability Assessment (CCVA)

The Climate Change Vulnerability Assessments work to identify the specific climate threats that face individual site-based locations and how the local ecological and social systems are likely to respond. CCVAs explore the primary challenges facing each location and work to identify actions that will be most beneficial given those location-specific characteristics and challenges. The CCVA tool is used at Rare's Fish Forever sites and is designed to home in on climate vulnerabilities related to small-scale fisheries. The CCVA guidance presents two options for assessing climate change vulnerability: a high-

<sup>64</sup> Coral Triangle Initiative. 2013. [Vulnerability Assessment Tools for Coastal Ecosystems](#).



level regional approach for comparing vulnerability across larger areas and a detailed local approach for exploring the specific drivers of vulnerability unique to each location. One can access the datasets via Rare's Fish Forever Website<sup>65</sup> and can provide information on ecological and social sensitivities, exposure, adaptive capacity, among others. The website is freely accessible to the public. Still, there are challenges in communicating the results of the technical assessments to LGU personnel and utilizing the data for proper planning.<sup>66</sup> The dashboard also provides recommended actions based on the responses, such as to protect seagrass and mangrove ecosystems and encourage rehabilitation.

#### Access Dashboard:

<https://experience.arcgis.com/experience/eab4cff29034436198e5194968390dc9>

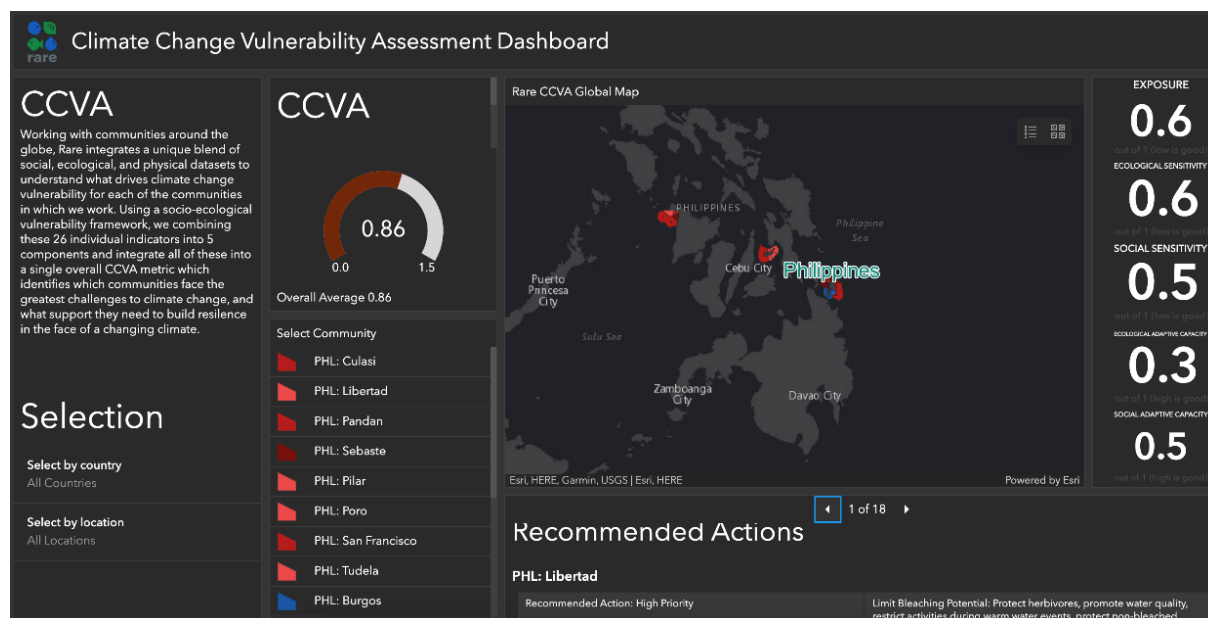


Figure 8. A screenshot of Rare's Climate Change Vulnerability Assessment Dashboard.

### Department of Science and Technology (DOST): Project Noah

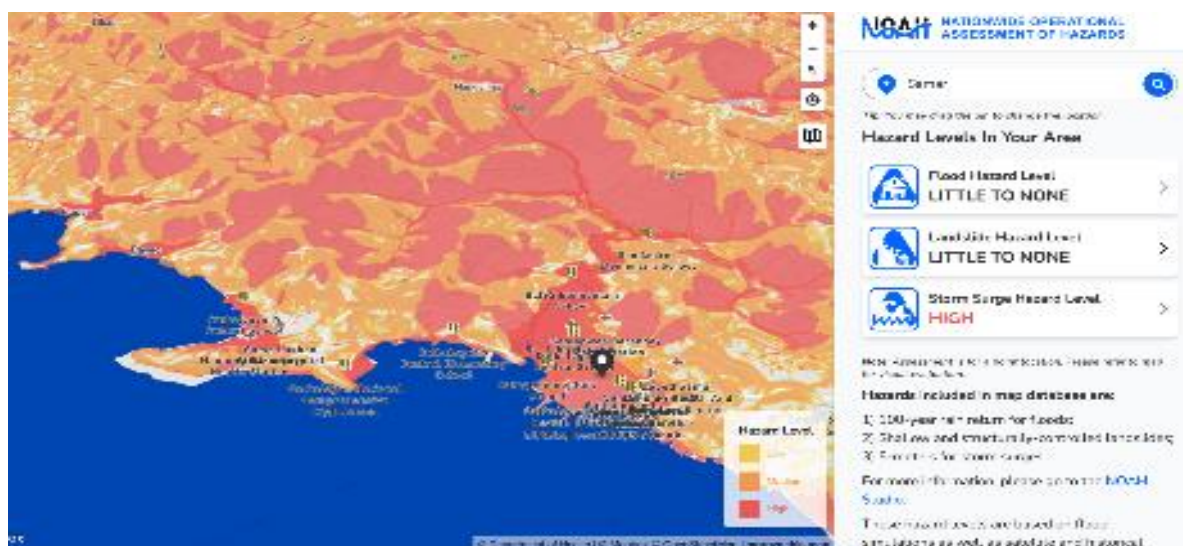
Project NOAH was created to harness current technology and management resources from various government agencies (PAG-ASA, PHIVOLCS, etc.) for disaster risk reduction. It has many components, including the Coastal Hazards and Storm Surge Assessment and Mitigation (CHASSAM). This component was completed in 2014 and was able to generate data on wave refraction, wave surges and coastal circulation models - information that is crucial for coastal erosion mitigation.<sup>67</sup> The Philippine government decommissioned Project Noah in 2017, but there still exists an interactive website<sup>68</sup> that shows detailed data on hazard levels (e.g. storm surge, floods, landslides) in all parts of the country (Fig 9).

<sup>65</sup> <https://portal.rare.org/en/tools-and-data/climate-change-vulnerability/>

<sup>66</sup> CCVA. [https://portal.rare.org/wp-content/uploads/2021/05/ccva\\_updated\\_040521.pdf](https://portal.rare.org/wp-content/uploads/2021/05/ccva_updated_040521.pdf)

<sup>67</sup> About Project Noah. officialgazette.gov.ph

<sup>68</sup> <https://noah.up.edu.ph/>



**Figure 9.** The Project NOAH online platform shows a detailed map of a coastal town in Samar Province and potential hazard levels in the area. Image source: Project NOAH.



**Figure 10.** Vulnerability assessment map of mangroves in Lian, Batangas generated from the I-C SEA Change Vulnerability Assessment Tool.

Several local scale mapping initiatives have also been done in various parts of the country using the methods developed by the two projects mentioned above. One example is the I-C SEA Change Vulnerability Assessment Tool by the De La Salle University, designed specifically as a participatory tool for non-specialists.<sup>69</sup> This project was able to generate a vulnerability assessment in five coastal barangays in Lian Batangas, Western Luzon Island (Fig 19).

Despite the vulnerability assessments that have been done in the years before, it is still important for such studies to be updated given the rapid rate of coastal developments that are happening in the Philippines.

<sup>69</sup> Pula et al. 2023. [Vulnerability Assessment of Coastal Resources in Lian, Batangas to Climate Change Hazards Using Combined CIVAT and ICSEA-C Toolkit from Classified LiDAR Data and LandSat8 Images.](#)

### 3.4. Zoning types

Republic Act 7160, the Local Government Code of the Philippines, requires all local government units to classify/reclassify public lands through zoning ordinances used as the primary basis for the development and use of land resources. LGUs follow the Comprehensive Land Use Plan (CLUP) which guides them in this process. The country's CLUP was updated in 2013-2014 in compliance with the Climate Change Act of 2009 (RA 9729) and the Disaster Risk Reduction and Management Act of 2010 (RA 10121) and now includes climate change adaptation and disaster risk reduction activities. The resource management framework under the new plan also shifted to a more ridge-to-reef approach to emphasise the connectivity of upland, lowland, and coastal ecosystems.

The CLUP classifies land into the base zones listed below. Mangrove forests can fall under both the terrestrial zoning and municipal water zoning categories, while seagrasses fall within the municipal water zoning only. This difference in approach the ecosystem type remains an ongoing governance and institutional coordination challenge.

Forests	Mineral Land	Industrial	Cemetery/Memorial Park
Agriculture	General Residential	General Institutional	Buffer/Greenbelt
Agro-Industrial	Residential	Special Institutional	Utilities, Transportation & Services
Municipal Waters	Commercial	Parks and Recreation	Tourism

**Table 6.** The list of land classification zones as described in the Comprehensive Land Use Plan (CLUP). Mangroves are typically under forests, and seagrass areas can be found under multiple categories.

The enactment of RA 8550 (now amended into RA 10654) has prohibited the further conversion of mangrove forests into aquaculture ponds or for any other purpose. At present, all mangrove areas are regarded as forest land and may be further classified into the following sub-zones:

- 1. Protection Forest Sub-Zone.** Land under this classification may be further classified into:
  - a. Forest Reserve Sub-Zone - land considered as “permanent forests”
  - b. National Park Sub-Zone - forest land or primitive character that is withdrawn from settlement and exclusively to preserve natural scenery and its natural/historic objects.
  - c. Military Reservation Sub-Zone - this refers to land which has been proclaimed the President for military purposes (e.g. airbase, naval base, target ranges, campsites, etc.)
  - d. Civil Reservation Sub-Zone - lands proclaimed by the President for specific purposes such as town sites, resettlement areas, ancestral lands, and others.
  - e. Mangrove Sub-Zone - areas with intertidal plants, including all species of trees, shrubs, vines, and herbs found on coasts, swamps, or borders of swamps.
  - f. NIPAS: Strict Protection Sub-Zone - as per the NIPAS Act, these are areas with high biodiversity values and/or have significance for indigenous communities.
- 2. Production Forest Sub Zone.** Land under this classification may also be sub-classified into:
  - a. NIPAS: Multiple Use Sub-Zone - areas with settlements, traditional or sustainable land use (e.g. agriculture, agroforestry and other income generating activities consistent with the protected area management plan)
  - b. Forest Buffer Sub-Zone - areas outside the boundary of protected areas that need development control to prevent or minimise harm to the neighbouring protected area.

- c. Industrial Forest Plantation Sub-Zone - land used for plantation of timber-producing plant species (e.g. Rattan, bamboo, etc.)
- d. Special Use Sub-Zone - all types of land used for purposes other than the production of timber or non-timber products (e.g. Integrated Forest Management Agreements).
- e. Grazing Land Sub-Zone - land used for the raising of livestock.

It is also important to mention that as per Administrative Order 15-90 (Regulations Governing the Utilisation, Development and Management of Mangrove Resources), DENR may issue a Certificate of Stewardship Contract to individuals, organisations, or cooperatives who are conducting sustainable activities within mangrove forests, as allowed by the management plan.

### 3.5. Tools Related to Ecosystem Service and Associated Assessments

Resource valuation is an important part of the blue economy agenda. However, it is important to mention that valuation studies are not as regularly done in the Philippines compared to the resource monitoring studies mentioned in the previous sections. The latest published nationwide study which measured the value of the country's coastal ecosystem services was done in 2017 and reported an estimated net annual benefit for coral reef ecosystems for USD \$6,102,141,278, mangrove ecosystems for USD \$240,451,507, and seagrass ecosystem for USD \$4,055,676,32.<sup>70</sup> This amount accounts for both the direct and indirect ecosystem services such as fisheries, carbon sequestration, shoreline protection, and biodiversity.

Marine ecosystem components	Net annual benefits per ha (US\$)	Total area (ha)	Net annual benefits
Coral reefs	2,347	2,600,000	6,102,141,278
Fisheries	1,184		
Tourism	827		
Research	50		
Carbon sequestration	18		
Shoreline protection	50		
Biodiversity	218		
Mangroves	973	247,200.00	240,451,507.54
Fisheries	13		
Mollusks/Echinoderms	26		
Nursery role	243		
Shoreline protection	672		
Biodiversity	19		
Seagrass	41	97,800.00	4,055,676.32
Fisheries	23		
Mollusks/Echinoderms	18		
Total			6,346,648,461.86

Table 7. Data from a nationwide valuation study of Philippine marine and coastal resources in 2017.

<sup>70</sup> Azanza et al. 2017. [Valuing and Managing the Philippines' Marine Resources toward a Prosperous Ocean-Based Blue Economy](#).



At present, the University of the Philippines Los Baños- Integrated Natural Resources and Environment Management (UPLB-INREM) and UP-MSI has an on-going project called the Resource Inventory, Valuation, and Policy in Ecosystem Services under Threat: The case of the West Philippine Sea (RE-INVEST WPS). This project is funded by the Department of Science and Technology - Philippine Council for Agriculture, Aquatic and Natural Resources, Research and Development (DOST-PCAARRD) and focuses on resource valuation of the coastal areas facing the West Philippine Sea - of the most disputed waters in the world. Apart from this, the program also seeks to develop a more standardised framework and methodology for natural capital accounting for the country's coastal and marine ecosystems.<sup>71</sup> The project began in April 2022 and is set to end in March 2025. Data gathered from the project is not yet available to the public.

### 3.6. Connectivity Studies

Larval and habitat connectivity is a key factor to ecosystem recovery and fisheries enhancement. One of the very first connectivity studies done in the Philippines was on larval dispersal patterns using the Lagrangian Dispersal Method on selected sites in the Philippines. The study was done under the ECOGOV 2 Project and covered the following areas: Baler Bay (Luzon), Camotes Sea (Visayas), Sibugay Bay (Mindanao), and Illana Bay (Mindanao). The study was able to model dispersal patterns during the different monsoon seasons of the country. Figure shows one of the results of the dispersal model in Sibugay Bay 10 days and 30 days after the dispersal of the particles. This simulation was also able to identify potential larval sink areas along the coast, which has important implications for establishing potential marine protected areas and fishing grounds.<sup>72</sup>

In 2011, another connectivity study using genetic parentage analysis was done on the reefs surrounding Apo Island Marine Protected Area – one of the oldest and the most successfully run community managed MPAs in the country.<sup>73</sup> The study revealed minimal self-recruitment and high connectivity among reefs belonging to different LGUs, emphasising

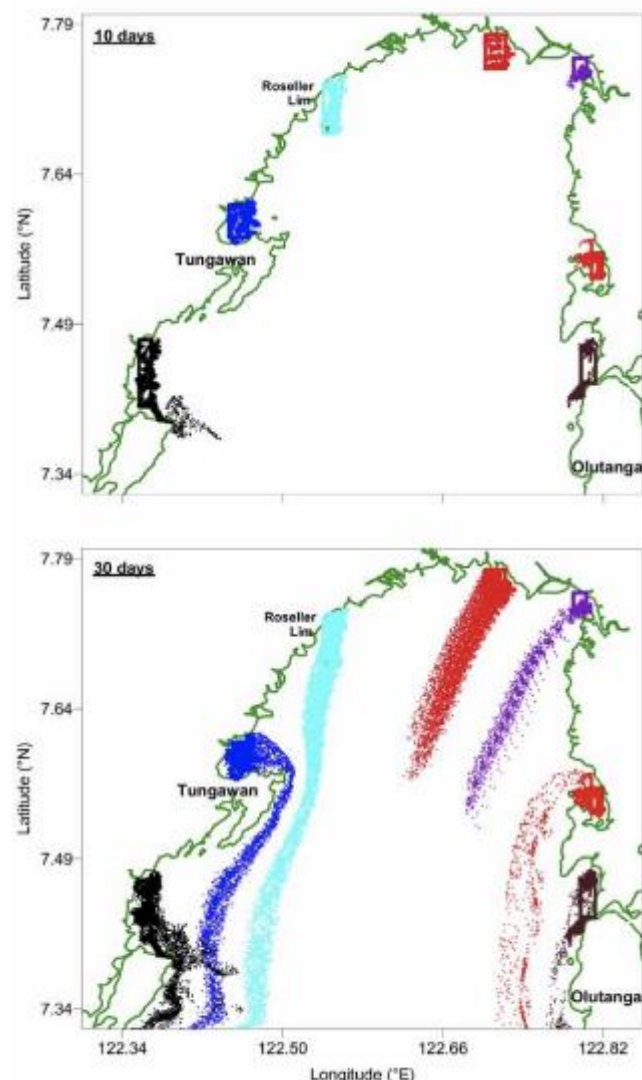


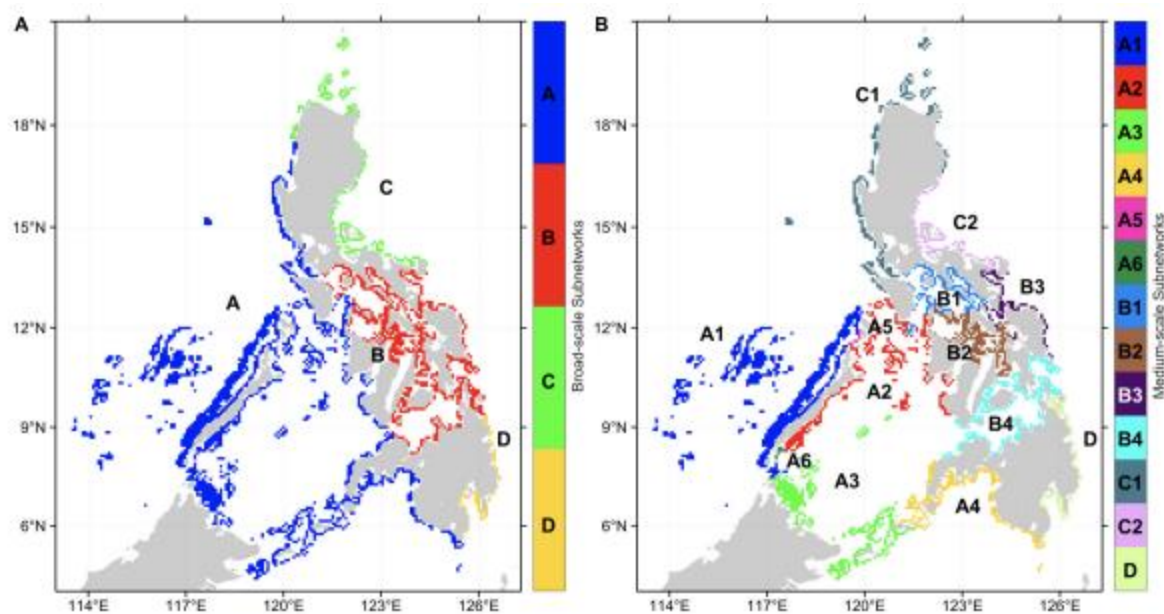
Figure 11. Dispersal due to tidal movement in Sibugay Bay.

<sup>71</sup> Marine Science Institute. 2023. [Tales from the Sails](#).

<sup>72</sup> USAID. 2007. [Establishing Larval Exchange and Reef Connectivity Using Larval Dispersal Models](#).

<sup>73</sup> Abesamis et al. 2017. [Reef-fish larval dispersal patterns validate no-take marine reserve network connectivity that links human communities](#).

the need to establish coordinated MPA networks between independent LGUs. The Marine Science Institute completed a more recent study on connectivity, covering a nationwide scale where they modeled the connectivity of 1,060 MPAs, focusing on the larval characteristics of coral, sea urchin, and grouper.<sup>74</sup> The study identified reefs with the highest connectivity indices which are those located offshore or at major strains separating two basins. Most of these reefs were also located at the eastern side of the archipelago. The study also identified four main reef sub-networks: Subnetwork A consists of the West Philippine Sea, Celebes Sea, and Sulu Sea; Subnetwork B consists of the seas in the Central Philippines; Subnetwork C consists of reefs in the northeastern Philippines; and Subnetwork D consists of reefs in the southeastern Philippines.



**Figure 12.** Map showing the board-scale subnetworks (left) and medium-scale subnetworks (right) for connected reefs in the archipelago.

Many of the MPAs in the Philippines, especially older MPAs, have been established based on local conservation and fishery goals, which did not consider larger-scale ecological connectivity. Hence, some LGUs have already begun scaling up the protection coverage by establishing MPA Network to ensure that the connectivity among adjacent ecosystems is preserved and protected. As of 2012, there have been 70 alliances in the Philippines which are participated by 270 cities or municipalities<sup>75</sup> Most of the studies done on ecosystem connectivity have used coral, fish, or invertebrate larvae to simulate dispersion and establish connectivity patterns. Most, if not all, study sites focus on coral reef sites only, leaving out possible connections with and between mangrove forests and seagrass meadows which are the crucial ecosystems for blue carbon.

<sup>74</sup> Pata and Yñiguez. 2021. [Spatial Planning Insights for Philippine Coral Reef Conservation Using Larval Connectivity Networks.](#)

<sup>75</sup> Horigue et al. 2012. [Marine protected area networks in the Philippines: Trends and challenges for establishment and governance](#)

## 3.7. Carbon Tools and Resources

### Carbon accounting methodologies

According to the latest Philippines National Communication (NC2) to the UNFCCC (December 2014), the Philippines has been using the 1996 Intergovernmental Panel on Climate Change (IPCC) Guidelines to develop its inventory of its GHG emissions. The NC2 included information from the 2000 GHG inventory, which already showed the Land Use, Land Use Change and Forestry (LULUCF) sector as a significant carbon sink, removing some 105,111 Gg CO<sub>2</sub>e from the atmosphere.<sup>76</sup> However, this estimate is not fully inclusive of the mitigation potential of blue carbon ecosystems because the Philippines was not yet implementing the latest IPCC guidance (IPCC 2006 GHG guidance and its 2013 Wetlands Supplement). This might change in the next National Communication or National Inventory Report, as the Philippines Government participated in a capacity building workshop in 2021 aimed to familiarize participants with the IPCC 2013 Wetlands supplement, specifically the Coastal Wetlands Chapter.<sup>77 78</sup>

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### 2006 IPCC GUIDELINES FOR NATIONAL GREENHOUSE GAS INVENTORIES

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*The 2006 IPCC Guidelines is the latest available guidance and internationally adopted methodology for GHG accounting at the national level. The 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (“IPCC Wetlands Supplement”) is part of the IPCC GHG package, including the latest 2019 refinement. The IPCC Wetlands Supplement details guidance on estimating and reporting GHG emissions and removals from coastal wetlands, specifically mangrove forests, seagrass meadows, and tidal salt marshes.*

In 2020, a new methodology for mapping mangrove ecosystems was developed using Mangrove Vegetation Index (MVI).<sup>79</sup> This work was one of the components for the Project for Comprehensive Assessment and Conservation of Blue Carbon Ecosystems and their Services in the Coral Triangle (BlueCARES) funded by Japan International Cooperation Agency (JICA). The tool makes use of three (3) Sentinel bands to discriminate the distinct color of mangrove forests and separate the readings registered by terrestrial vegetation and other types of land cover. In 2019, the project reported that the total mangrove coverage in the country was at 227,808 ha, which was close to the estimate published by Global Mangrove Watch in 2016 (220,984 ha) but higher than the Phil-LIDAR estimate (208,020 ha). This difference is likely due to the discrepancies of remote sensing attribution of mangrove ecosystems given the reflections of the water.

At a global level, the Blue Carbon Initiative (BCI) developed a manual in 2014 that provides a detailed overview for resource managers and scientists with standardized recommendations and methodologies for carbon measurement in blue carbon ecosystems. While the Philippines has yet to implement the manual at a national level, it aligns with the IPCC Wetlands Supplement and goes into

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<sup>76</sup> Philippines National Communication (NC2). 2014. [Second National Communication to the UNFCCC](#)

<sup>77</sup> CIFOR. 2021. [Capacity Building on IPCC 2013 Wetlands Supplement FREL Diagnostic & Uncertainty Analysis](#).

<sup>78</sup> Intergovernmental Panel on Climate Change. [2013. Supplement to the 2006 IPCC Guidelines for National GHG Inventories: Wetlands](#).

<sup>79</sup> Baloloy et al. 2020. Development and application of a new mangrove vegetation index (MVI) for rapid and accurate [mangrove mapping](#).

more technical detail including providing sample equations and worksheets to support data collection,<sup>80</sup> which may be useful for future blue carbon efforts in the Philippines. The policy counterpart is also available on the BCI website on guidance for including blue carbon ecosystems in a country's NDC.<sup>81</sup>

## Carbon Markets

*“Carbon credits can represent emission reductions achieved through either avoidance, for instance by capturing methane from landfills, or removal from the atmosphere, such as sequestering carbon through afforestation or directly capturing carbon from the air and storing it. Each carbon credit represents 1 metric ton of carbon dioxide equivalent (tCO<sub>2</sub>e) reduced or removed.”*

[State and Trends of Carbon Pricing, 2023](#). World Bank.

While the Philippines has yet to adopt a regulation or policy to establish a carbon crediting system, there is significant political interest in doing so to align with the Climate Change Act of 2009 as well as private sector interest. The DMCI Mining Corp has offered to support the government to create a carbon crediting system to support large-scale reforestation projects for climate mitigation, adaptation, and disaster risk reduction.<sup>82</sup> There continues to be further study regarding carbon credits, including the recent call for a study of carbon pricing instruments, which is being conducted under the Department of Finance's (DOF) Technical Working Group Meeting (TWG) for Preparing Carbon Pricing Instruments in the Philippines. The working group met recently January 2024 to discuss ambition needed and how to assess fiscal impact of different sectors.<sup>83</sup> Carbon crediting mechanisms can take different forms. Select examples include:

Type	Description	Select global example
International	Established under international treaties, such as the Paris Agreement. Demand is often from governments or entities meeting their emission reduction commitments or obligations.	Article 6.4 Crediting Mechanism of Paris Agreement; Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)
Independent	Voluntary carbon market, typically established by nongovernmental entities or independent standards. Demand is often from private sector looking for carbon credits or offsets to meet net-zero or other emission reduction claims for the business/entity. Demand can also come from results-based approaches to incentivize climate action and the carbon credit is not traded, and thus could be used to meet NDC targets.	Verra's Verified Carbon Standard; Plan Vivo
Domestic	Established by national or sub-national governments. Demand is often from domestic companies that need to meet commitments under an emissions trading system or carbon tax.	Australia Emission Reduction Fund; California Compliance Offset Program

**Table 8.** Description of different types of carbon crediting mechanisms at the international, independent, and domestic level. These are not exclusive to blue carbon but applicable to all carbon markets (nature-based or other); examples listed are primarily nature-based.

<sup>80</sup> The Blue Carbon Initiative. 2014. [Blue Carbon Manual](#). (English and Spanish)

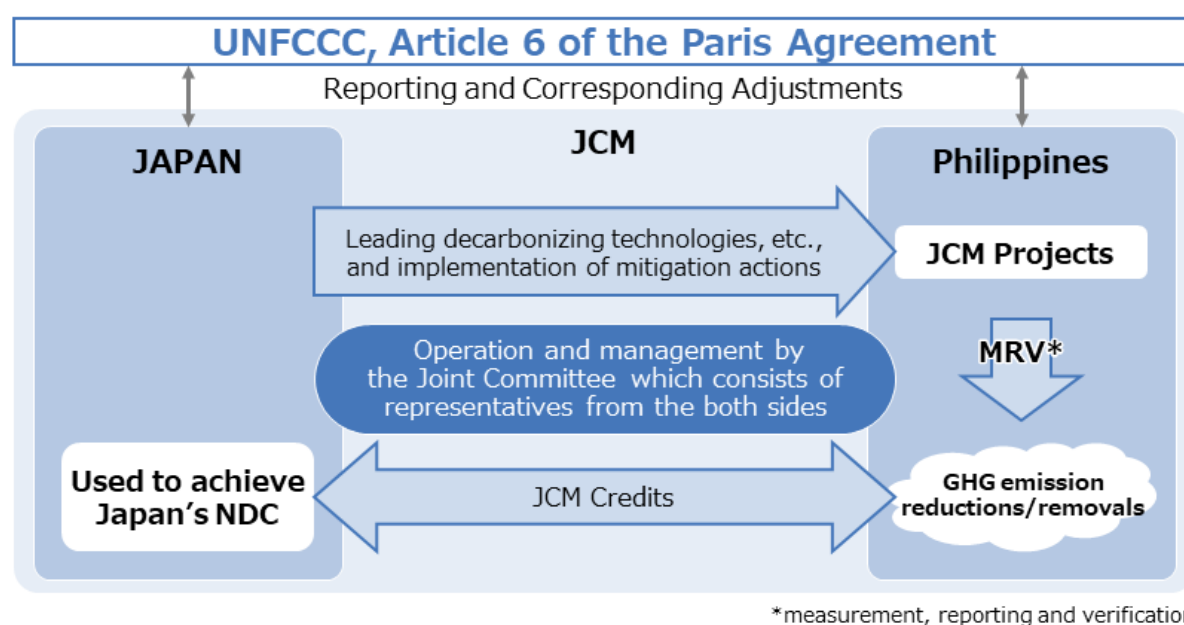
<sup>81</sup> The Blue Carbon Initiative. 2023. Guidelines for Blue Carbon and NDC (2<sup>nd</sup> ed.)

<sup>82</sup> PhilStar. 2022. [Law for carbon credit systems in Philippines pushed](#)

<sup>83</sup> Department of Finance. 2024. [Recto Calls for Study of Carbon Pricing Instruments, underscores need to identify optimal mix for PH.](#)



A relevant example of a domestic crediting mechanism is Japan's Joint Crediting Mechanism (JCM). While the guidance is still being developed at the international level in the UNFCCC, countries are still identifying areas of bilateral cooperation to contribute to Article 6.2, including bilateral agreements with Japan. The Philippines signed a bilateral agreement with Japan in 2017 to contribute to the JCM. Japan signed bilateral agreements with more than 20 countries for similar arrangements. The JCM aims to support decarbonization and mitigation actions, and sustainable development in the Philippines with the intent to evaluate the emission reductions or removals to use it towards Japan's NDC. Below is a schematic of the JCM:



**Figure 13.** Demonstrating Japan and the Philippines bilateral agreement for GHG emission reductions and corresponding adjustment usage towards the Japan NDC. <https://www.jcm.go.jp/ph-jp/about>

In a report by the Japanese Ministry of Environment, there are currently 17 renewable energy projects in the Philippines that are under the JCM Financing Program.<sup>84</sup> The JCM is considering how these projects will contribute towards the Paris Agreement's Article 6 and/or the country NDC, given the requirement to avoid double counting. The JCM is anticipating the need for registries to track relevant information related to the issued credit.<sup>85</sup>

### Domestic carbon research

Other studies on blue carbon ecosystems in the Philippines cover smaller spatial scales but the number of research work focusing on BCEs have been increasing throughout the years. This might be primarily driven by the increasing availability of institutions willing to fund research work on this topic. The table below lists other blue carbon research in the Philippines in the last five years.

Topic	Ecosystem	Study Site	Author and Year
Measuring carbon sequestration in a restored	Mangroves	Pagbilao and	<a href="#">Castillo et al., 2022</a>

<sup>84</sup> Japan Ministry of Environment. November 2023. Recent Development of The Joint Crediting Mechanism (JCM)

<sup>85</sup> ADB. November 2019. [Article 6 of the Paris Agreement: Drawing Lessons from the Joint Crediting Mechanism](#)

mangrove forest with various sediment surface elevation		Catanauan, Quezon Province	
The role of seagrasses in climate change mitigation in the Philippines	Seagrass	-na-	<a href="#">Fortes, 2021</a>
Assessment of BCEs using the Driver-Pressure-State-Impact-Response. (DPSIR) method	Mangroves and Seagrasses	Busuanga Island and Coron Island (Province of Palawan)	<a href="#">Quevedo et al., 2021</a>
Local perceptions on mangrove forests and their benefits and its implications for Eco-DRR and blue carbon management	Mangroves	Eastern Samar	<a href="#">Quevedo et al. 2020</a>
Local perceptions on seagrass ecosystems and their blue carbon benefits	Seagrasses	Eastern Samar	<a href="#">Quevedo et al. 2020</a>

**Table 9.** Select examples of other blue carbon research in the Philippines in the last five years, showing names of the field experts, study sites, years of publication, and work coverage.

### 3.8 Blue Carbon Project Frameworks

With the increasing global attention in developing blue carbon projects that engage in a carbon market or other conservation/non-market approaches, there is a strong need for a common approach and consistent guidelines for blue carbon actions. There are key international resources to draw from regarding blue carbon project development and policy frameworks that the Philippines that utilize as appropriate for its national and local context. Many of the resources and optional frameworks stem from international discussions around climate change, biodiversity, and Nature-based Solutions.

**High Quality Blue Carbon Principles and Guidance.** Several experts and interested parties<sup>86</sup> developed a set of guidance principles for developing projects and defining high-quality blue carbon projects. The principles are voluntary with the aim for project developers, implementers, and policymakers to use it as a common resource. The HQBCP intends to serve as a guidance document, rather than as a verification or certification system, thus it is not a certification tool. The guidance offers a flexible, yet robust and high-integrity approach to project development. A Practitioners Guide is under development and will be available in late 2024. The HQBCP is available in [Tagalog](#), [English](#), Spanish, French, Portuguese, Bahasa Indonesia, and Mandarin: <https://merid.org/high-quality-blue-carbon>

**Blue Carbon Readiness Framework.** The World Bank's ProBlue team developed an easy-to-follow framework based on existing guidance documents to provide a practical resource to guide governments in catalyzing and scaling public and private investment in blue carbon projects. The actions to establish readiness or enabling conditions are listed in three main pillars: 1) data and analytics, 2) policies and institutions, and 3) finance. The framework and associated report can be found here: [www.worldbank.org/en/publication/unlocking-blue-carbon-development](http://www.worldbank.org/en/publication/unlocking-blue-carbon-development)

**The International Partnership for Blue Carbon.** While the IPBC is a partnership, it also serves as a resource repository for the latest tools and information on blue carbon globally. For example, the IPBC

<sup>86</sup> The core team included The World Economic Forum (WEF) Friends of Ocean Action, the Ocean Risk and Resilience Action Alliance (ORRAA), Salesforce, The Nature Conservancy, and Conservation International with the support of Meridian Institute. Rare and other organizations were part of the extensive consultation process.

has the following resources, tools, and frameworks that the Philippines can utilize as it builds out further projects:

- [Inventory of Global Blue Carbon Actors](#)
- [Global Blue Carbon Ecosystems in International Frameworks and Conventions](#)
- [Coastal blue carbon: An Introduction for Policy Makers](#)
- [The High-Level Panel for a Sustainable Ocean Economy \(Ocean Panel\)'s Special Report on Blue Carbon, The Blue Carbon Handbook](#)

**Guidelines for Blue Carbon and Nationally Determined Contributions.** A revised guidance document highlights how protecting, restoring, and sustainably managing a country's blue carbon ecosystems can significantly enhance climate ambition for both mitigation and adaptation action. The report looks ahead to the 2025 NDC cycle and aims to provide practical steps towards inclusion, recognizing that each NDC will vary based on national context. [www.thebluecarboninitiative.org/policy-guidance](http://www.thebluecarboninitiative.org/policy-guidance)

## Section 4. Strategy and Policy

### 4.1. Biodiversity

*“The Philippines envisions a future where biodiversity is restored and maintained to sustain healthy, resilient Filipino communities while delivering benefits to all. The post-2020 GBF must ensure clear linkages to national policy mechanisms and implementation that recognize the intersections between climate change, biodiversity, and sustainable development. [...] Despite these efforts, much remains to be done across all the land and seascapes to ensure the balance between advancing human development and protecting biodiversity.”*

– Philippine Country Statement at UN Convention on Biological Diversity COP15, 2022<sup>87</sup>

As one of the most mega-biodiverse countries in the world, the Philippines ranks 5<sup>th</sup> in number of plant species and contains about 5% of the world’s flora.<sup>88</sup> With the adoption of the UN CBD’s Kunming-Montreal Global Biodiversity Framework, the global community — including the Philippines — has committed to halt and reverse biodiversity loss by 2030. In the Philippines, one of the largest drivers of habitat loss of coastal ecosystems is commodity production<sup>89</sup> such as aquaculture, while elsewhere in Southeast Asia other commodities such as rice and palm oil drive significant mangrove loss.<sup>90</sup> Urbanization is also a local driver of mangrove loss in coastal cities.<sup>91</sup>

#### Governance

Management, enforcement, and responsibility to support and protect biodiversity in the Philippines cuts across governance levels ranging from national departments, local government, and protected area management.

**National:** The DENR’s **Biodiversity Management Bureau (BMB)** is the primary bureau involved in biodiversity conservation. It is responsible for management and implementation of protected areas like NIPAS, including resource monitoring, implementation of approved zoning plans, law enforcement, prescription of protected area fees, and many others. Management is conducted via a Protected Area Management Board (PAMB) composed of the Regional Executive Director, and representatives from the regional government, the municipal government, the barangays covering the protected area, NGO/people’s organizations, the Indigenous People’s organization, and other government agencies. Additionally, the BMB implements the Coastal and Marine Ecosystems Management Program (CMEMP) that aims to address the drivers and pressures to the marine environment. It is under this program where the Philippines is now undertaking activities related to the protection of its blue carbon ecosystems.

**Sub-national: MPA Network (MPAN) Management Board.** Many of the LMMPAs in the Philippines are designed around local conservation goals and perspectives. Local goals do not often integrate an ecosystem approach to its conservation objectives and implementation plans. As a solution, MPA

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<sup>87</sup> Philippine Country Statement at UN Convention on Biological Diversity COP15, 2022

<sup>88</sup> CBD Philippines Country Profile. <https://www.cbd.int/countries/profile?country=ph>

<sup>89</sup> Global Mangrove Watch, Philippines Profile: Drivers of Change widget

<sup>90</sup> <https://www.pnas.org/doi/full/10.1073/pnas.1510272113>

<sup>91</sup> Ibid.



Networks were established to scale-up the management capacity and the scope of protection of these “isolated” protected areas. MPA Networks are basically a group of independent LMMPAs (usually under the jurisdiction of different LGUs) strongly connected through various means (e.g. larval exchanges, fishery activity, etc.) MPA Network members implement coordinated activities such as law enforcement and patrolling, this is an example of an LGU alliance. This entity is overseen by an MPAN Management Board which is composed of the following: 1) governors/mayors of the member LGUs; 2) representatives from DA, DENR, DILG; 3) representative from the constituent MPAs; 4) representatives from NGOs working in the area; and 5) academe.

MPA Networks need to be registered by the DENR BMB. This is beneficial for the management body as this will allow them to access funds, technical expertise, as well as the possible recognition of being categorized as an OECM (Other Effective Area-based Conservation Measure). Furthermore, **DENR’s Regional Offices** also play a critical role at the sub-national level with regards to effective management of protected areas.

**Local: Locally-Managed Marine Protected Areas (LMMPA).** LMMPAs are protected by the LGUs, and established and institutionalized through the declaration of local ordinances. As of 2019, there are more than 1,800 LMMPAs in the country.<sup>92</sup> They are overseen by a management board composed of local stakeholders. Although the resources of LGUs are more limited compared to NIPAS areas, many of the more effective MPAs are LMMPAs that are run and managed by the local community.

#### **International Policy & National Commitments (biodiversity specific)**

- **ASEAN Heritage Parks (AHP).** ASEAN Heritage Parks are areas protected for their high ecological importance in the ASEAN region. The country currently has nine ASEAN Heritage Park Sites spread out across the archipelago, and all 9 are also declared protected areas under Philippine Law. The AHP Programme is currently managed by the ASEAN Center for Biodiversity which supports the operation of these protected areas through the conduct of training courses for PA workers, promotional activities, and many others.
- **UNESCO World Heritage Convention.** The Philippines ratified the UNESCO World Heritage Convention in September 1985, and at present, is home to six UNESCO World Heritage Sites. Three of the sites are natural heritage sites and are also declared as protected areas under the NIPAS Law. Only one site is at least partially relevant for the topic of this study: Tubbataha Reefs Natural Park. While the site does not feature mangroves or seagrasses, it protects 96,828 ha of valuable coral reefs.
- **UNESCO Biosphere Reserves.** Biosphere Reserves are sites for nature and people and testing sites for sustainable development. They are hence priority sites for testing new approaches for ecosystem restoration. The Philippines has a Biosphere Reserve already since 1977, but only in recent years has taken an active role in this UNESCO program.
- **Convention on the Conservation of Migratory Species of Wild Animals (CMS).** The Philippines considers migratory species as a part of the country’s biodiversity. The country became a party to the Conservation of Migratory Species of Wild Animals in 1994 and was the first ASEAN nation to join the convention. Under the CMS, the country is obliged to: (1) protect migratory species, (2) conserve or restore their habitats, (3) mitigate obstacles to their migration, and (4) control other factors that could endanger these species within the country’s jurisdiction.

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<sup>92</sup> The Coral Triangle Initiative website: [Marine Protected Areas](#).

### Select Local & National policies and regulations

The National Integrated Protected Act System (NIPAS), [Republic Act No. 7568](#), is the legislation that institutionalized the establishment of nationally managed and integrated protected areas in the Philippines. The law aims to conserve and protect ecologically important public lands and areas with biologically unique features. It was later expanded in 2018 (RA 11038) to add an additional 94 sites. NIPAS areas are further categorized into these different types based on their size and characteristics:

- Strict nature reserve - areas with outstanding ecosystem features and conserved specifically for scientific study, environmental monitoring, and for the maintenance of genetic diversity.
- Natural parks - large relatively pristine and undisturbed areas. Extractive activities are prohibited as they are considered of national or international importance for scientific, educational, or recreational reasons.
- Natural monuments - protected for nationally significant and unique natural features
- Wildlife sanctuary - areas dedicated for protecting nationally significant flora and/or fauna and may require specific human interventions.
- Protected landscapes and seascapes – protected areas that balance biodiversity protection and sustainable livelihoods of local communities.
- Resource reserve - relatively isolated areas designated to protect the site's natural resources for future use or prevent/contain present development activities.
- Natural biotic areas - areas protected for its cultural value and guarded to allow indigenous residents to adapt to modern technologies at their own pace.

### Select policies and documents

(Draft) [DENR Administrative Order for the Identification and Recognition of OECMs](#). The DENR is currently working on an Administrative Order that will guide the agency in the identification of OECMs in the country to contribute to the 30x30 Initiative. The BMB will identify candidate OECMs based on published OECM criteria. The document lays out the specific roles of the various DENR offices (e.g. national office, regional office, CENRO, PENRO). The order aims to establish the National Registry of OECMs to serve as the national information management body for all OECMs in the country. This draft is currently in its initial revision stage. Rare and other NGOs are part of the technical group working.

[DENR Roadmap for the 30X30 Initiative](#). The DENR conducted a consultation workshop in 2023 to identify measures needed to meet the 30X30 target. The workshop successfully laid down initial plans to start the country's work on the initiative. Listed below are the current activities within DENR's road map to achieving the 30x30 Initiative:

- **A proposed spatial coverage of conservation areas (Fig 23)** - there are currently 4 proposed NIPAS areas that are in different stages of the establishment process which could potentially add to the 30X30 target. DENR is also eyeing to declare the remaining Key Biodiversity Areas (KBA) and Ecologically and Biologically Significant Area (EBSA) into the protected area list.

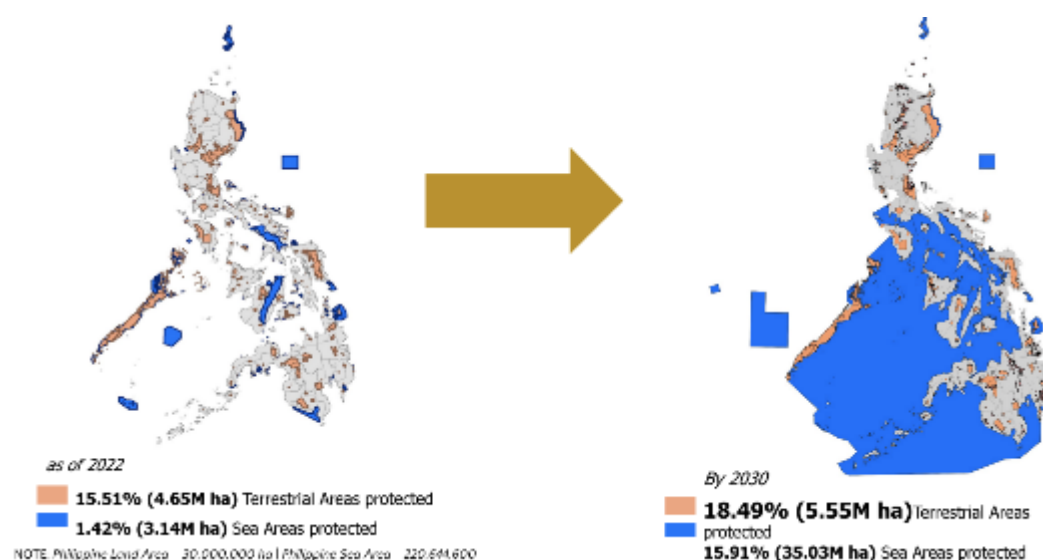


Figure 14. Proposed areas for protection by 2030. Image source: DENR-BMB; 30X30 Philippines

- **Identification of possible institutions for the management of OECMs** – The government is intending to include the private sector, IP groups, and local communities as possible institutions that may manage OECMs. Government and private partnerships will also be considered in the management system.
- **Rough list of initially identified OECMs in the Philippines** - a rough category for potential OECMs has also been listed by the agency: 1) declared critical habitats and key biodiversity areas; 2) territories that are conserved by the indigenous people and local communities (ancestral domains); 3) local conservation areas; 4) Class 1 (restricted areas) classified caves outside PAs; 5) Inland wetland KBAs outside PAs with active conservation management including river systems/ riparian habitats with threatened species; 6) Peat forests; 7) Buffer zone areas; 8) Ecotourism (historical, cultural) sites; 9) Company Owned/ Private land conservation area (areas used for Corporate Social Responsibilities of CSR); 10) Marine areas/Forest reserves set aside for biodiversity research or managed by academic institutions; 11) Large Marine Managed Areas (Bays and Seascapes)
- **List of possible NGOs to contribute to achieving the 30X30 target.** The agency highlighted the importance of forging strong partnerships with stakeholders and other NGOs in achieving the 30x30 target. In the initial consultation workshop, potential/ongoing partners included: Tebtebba, ASEAN Centre for Biodiversity, Wildlife Conservation Society (WCS), Centre for Sustainability PH, McKinsey & Company, UK Foreign, Commonwealth and Development Office (FCDO)/British Embassy Manila, MPA Support Network and Pacific Environment, Rare, MERF/UPMSI, WWF Philippines, Oceana Philippines International, Conservation International Philippines, WWF-Philippines, Foundation for the Philippine Environment, and the Forest Foundation of the Philippines.

In 2024, the DENR with support from Rare and other organizations will conduct follow through consultations to map out the marine key biodiversity areas and lay it down with other important maps such as the nationally legislated protected areas, the LMMPAs and potential candidate OECMs.

## 4.2. Sustainable Blue Economy

*“The Philippine government defines blue economy as a term used to characterize the sustainable management of marine resources and the marine-linked sectors in the economy. In the Philippines, the blue economy—both the management of marine resources and its outcomes—represents an important source of income and resources for the vast majority of the population.”*

- Azanza et al, Valuing the Blue Economy Using a Philippine Lens

As the second largest archipelagic country in the world, the Philippines has two-thirds its population living in coastal towns or municipalities and at least 2 million Filipinos are directly reliant on its ocean resources. In 2022, the Philippine Statistics Agency reported that the ocean economy was valued at 857.74 billion PhP, which accounted for 3.9% of the country’s GDP. The country’s maritime economy encompasses a wide range of sectors- from ship-building, fisheries, aquaculture, tourism, and transportation to offshore energy exploration, involving multiple agencies and sectors. For example, Philippine mangrove ecosystems can produce approximately US\$538 worth of fish products per hectare annually.<sup>93</sup> The top three activities which showed the highest contributions to the economy for that same year were reported to be: (1) coastal accommodation and food and beverage services activities, (2) coastal recreation, and (3) offshore and coastal mining and quarrying (Table 10).

Industry	2022
I. AGRICULTURE, FORESTRY & FISHING	270,474.72
a. Ocean fishing	270,474.72
II. INDUSTRY	346,395.26
a. Offshore and coastal mining and quarrying	56,252.66
b. Manufacture of ocean-based products	184,964.12
c. Coastal construction	8,662.01
d. Ocean-based power generation, transmission, and distribution	96,516.47
III. SERVICES	240,874.16
a. Marine equipment wholesale and retail	6,453.52
b. Sea-based transportation and storage	125,605.27
c. Marine information services	242.46
d. Marine insurance	10,804.61
e. Marine renting and business activities	53.84
f. Maritime safety, surveillance and resource management	32,329.81
g. Maritime education	2,044.20
h. Coastal accommodation and food and beverage services activities	42,003.20
i. Coastal recreation	21,337.24
<b>TOTAL OCEAN-BASED ACTIVITIES</b>	<b>857,744.14</b>

**Table 10.** The value (in million Pesos) of ocean-based industries from 2021-2022. Source: PSA.

<sup>93</sup> Philippine NBSAP 2011 – 2028 <https://www.cbd.int/doc/world/ph/ph-nbsap-v3-en.pdf>

Despite the huge contribution of ocean-based activities to the economy, the country presently does not have a strategic framework to guide the sustainable development of this sector. This section aims to provide detailed accounts of governance systems and international and local policies focused on the blue economy, as well as commentaries on gaps and recommendations that can help develop this highly important industry in the Philippines.

## Governance

The Philippines is endowed with a vast and biodiverse coastal and marine resource and has much to gain if it were to fully develop its blue economy. The relevant programs are spread throughout different agencies and sectors, outlined below are select examples of relevant agencies.

**National: Department of Tourism (DOT).** Considered one of the key drivers of a sustainable ocean economy, the DOT institutionalized by the Tourism Act of 2009 which acknowledges tourism as an “indispensable element” of the Philippine economy and created a formal agency. In 2023, the department recorded more than 5 million international tourist arrivals, resulting in a generated income of 480 billion PhP from international tourism receipts, one of the biggest contributors to its ocean-based economy. The Tourism Act of 2009 particularly highlights sustainable tourism development as an integral part of the country’s economic development. However, many tourism activities in the country have also contributed to habitat degradation and loss, particularly those that are unregulated, unregistered and/or not monitored by the agency. One outstanding example is the closure of Boracay Island in 2018, which is considered as one of the top tourism spots in the country, due to years of tourism-related environmental damage. The island reopened after a six-month rehabilitation period following newer and stricter guidelines for tourists and local establishments. The case of Boracay Island, however, is not isolated as many other tourism spots in the Philippines still follow unsustainable tourism practices. Persistent issues such as over-tourism and poor enforcement of environmental laws remain to hinder the country’s aspiration for sustainable tourism.

**Philippine Ports Authority (PPA).** As an archipelagic country, the Philippines is heavily reliant on the water transport sector to move products within, into, and outside of the country. The Philippine Ports Authority is the primary government body responsible for “establishing, developing, regulating, managing, and operating a rationalized national port system in support of trade and national development”. This mandate was created by Presidential Decree (P.D.) No. 505 in 1974.

Recent data on inter-island port activities has shown that almost 99% of all domestic products are traded through ports, giving the PPA a crucial role in moving the country’s ocean economy. The Philippine Ports Authority works closely with the National Economic and Development Authority (NEDA) to plan, establish, and develop ports all around the country. PPA also works in close coordination with the Department of Tourism and with the respective LGUs where ports under the jurisdiction of the PPA are located.

In a World Bank report in 2014, the Philippines’ domestic shipping industry was flagged for its poor safety record, evident from the country’s frequent maritime accidents, and overall low service quality. The Philippines was also recorded to have the highest casualty rate in the East Asia Region. The poor state of inter-island transportation is alarming as Philippine ports support many of the ocean-based activities such as tourism, manufacturing, ocean fishing, and many others. Actions have already been



taken to address this issue in the older iteration of the Philippine Development Plan (2017-2022), including a legislative agenda to address the Philippines water transportation problems. One of the action steps mentioned in the document is the proposal to establish a National Transport Policy, which will establish an independent regulatory body to focus especially on the development of the Philippines' maritime transport sector. The implementing rules and regulations for the NTP were published by NEDA in 2020, and this is expected to streamline processes, operations, and development plans for the sector. Four years after the release of the IRR, the expected outcomes of the NTP are yet to be felt on the ground.

The Blue Economy sector is wide ranging and could also include DoTR, BFAR, and other agencies. Others not specified like the **Department of Energy** also have implications for the blue economy with its renewable energy initiatives, but are outside of the scope of this paper.

### Select Local & National Policies and Regulations

[\(Proposed Legislation\) The Blue Economy Act](#) is proposed legislation that is set to form the first-ever national framework for developing the country's blue economy. The legislation was introduced in 2023 to the Congress and Senate houses and has recently been approved by the Lower House in December 2023 as House Bill No. 9662. If approved by the president, the bill will institutionalize the following as part of a comprehensive framework for the sustainable development of marine and coastal resources. It will be administered by the National Economic and Development Authority (NEDA).

- Creation of a National Maritime Council which will formulate an integrated, ecosystem-based strategy to promote the blue economy.
- Identification of existing agencies to serve as support for the bill
- Conduct nationwide economic environmental accounting
- Enhance the protection of the country's marine and coastal resources
- Strengthen the implementation of the integrated coastal area management framework
- Implement a nationwide marine spatial planning to identify maritime zone priority activities
- For the Banko Sentral ng Pilipinas to mandate Philippines banks to adopt the UNDP Sustainable Blue Economy Finance Principles
- Enhance marine science and ocean literacy

Overall, the scope and coverage of this bill is still broad and encompassing for the government to act alone. The direct involvement of non-government institutions from multiple sectors is also crucial to support or implement the many technical capacities required for the industry's development.

With the current absence of a national framework to address a whole-of-nation approach to develop the country's ocean economy, current initiatives will remain to be "isolated". It is important, therefore, that a national strategy need to be established by the Philippine government, first and foremost, to ensure that all efforts from both the government and civic groups are strategic and complementary for supporting the country's blue economy agenda.

[The Philippine Ocean Economy Satellite Account \(POESA\)](#). The Philippines Ocean Economy Satellite Account is developed by the Philippines Statistics Agency to measure and monitor the growth of the Philippines' ocean economy. The POESA quantifies the economic value of the following ocean-based activities: ocean fishing, off-shore and coastal mining and quarrying, manufacture of ocean-based

products, coastal construction, ocean-based power generation, sea-based transport and storage, marine insurance, marine renting and business activities, maritime safety, surveillance, and resource management, maritime education, recreation, and coastal hotels.

The first initiative to measure the value of the Philippines ocean-based activities was in the early 2000s to respond to global initiatives and answer the demand for such data in policymaking. Today, the POESA is seen as an indispensable tool for developing the blue economy framework and the proposed Blue Economy Bill. In a recent POESA report, the Philippines ocean-based economy was reported to grow by 21.1% in 2022, valued at 857.75 billion PhP, accounting for 3.9% of the country's GDP.

[Roadmap to Institutionalise Natural Capital Accounting, 2022–2040](#). The NEDA, DENR, and PSA published the Roadmap to Institutionalise Natural Capital Accounting in May 2022 to serve as the strategic guide to the implementation of natural capital accounting from 2022 to 2040. The document is adopted from the UN System of Environmental-Economic Accounting Framework, specifically from the Ecosystem Accounting Framework and the Central Framework.

Natural capital accounting has been conducted since 1997 through Executive Order No. 46 which institutionalized the creation of the PEENRA (Philippine Economic-Environmental and Natural Resources Accounting) System. The government units mandated to support the national accounting system initiative are the DENR, NEDA, and the National Statistical Coordination Board. The initial results were published in 2000<sup>94</sup>. After PEENRA, another round on NCA was done from 2014-2017 through the Philippine Wealth Accounting and the Valuation of Ecosystem Services (Phil-WAVES). The most recent iteration of the NCA began in 2018 and is ongoing at present.

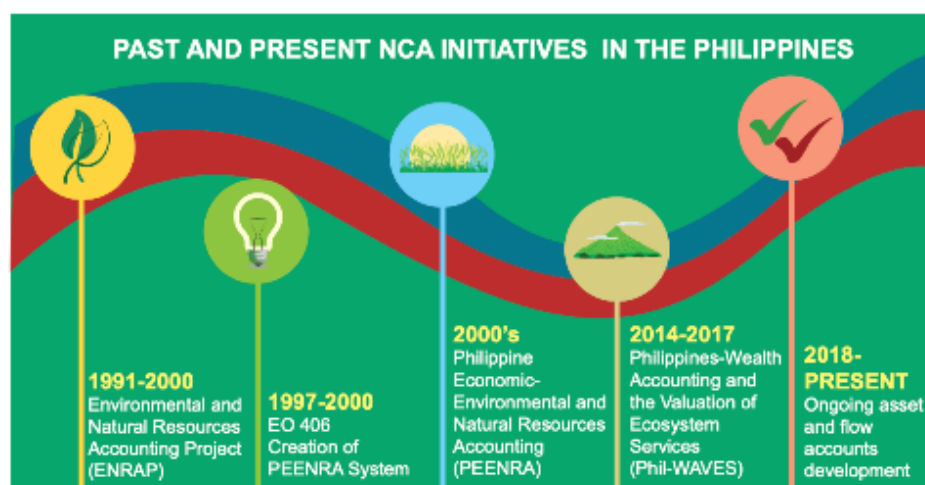


Figure 15. NCA initiatives in the Philippines from 1991-2022. Image source: NEDA.

Although an executive order has been passed for the conduct of a nationwide natural capital accounting in 1997, the passage of a national legislation is still crucial to financially sustain activities under this initiative. As detailed in the previous section, national capital accounting is usually done on a per-project basis and is often highly reliant on external funding sources. In 2021, Deputy Speaker Loren Legarda introduced the proposed bill titled the **Philippine Ecosystem and Natural Capital**

<sup>94</sup> Note: Only hard copies available. Available upon request from the Philippine Statistics Agency.

**Accounting (PENCAS) Law** into the Lower House, which sought to institutionalize a nationwide national capital accounting and develop NCA units within government agencies. As of 2022, the bill is still pending in the House of Representatives.

It is important to recognize while some existing government structures exist, it is currently sector-specific and does not look at blue economy development from a whole-of-country perspective. Nonetheless, these existing policies can potentially leverage and provide support to the implementation of a much-needed national blue economy framework. The policies identified in the Appendix B can serve as policy leverage in developing a whole-of-nation approach to developing the country's blue economy.

### 4.3 Mangrove and Seagrass Ecosystem Restoration

The Philippines has one of the most biodiverse mangroves and seagrass ecosystems in the world with a total of 42 mangrove species and 19 seagrass species recorded in the country. Mangrove areas are generally classified as forest reserves in the Philippines therefore have existing management strategies specific for this resource. Seagrass resources, on the other hand, are generally not considered a protected resource unless found within legally declared protected areas.

This section will dissect the different governance mechanisms, local policies, and international commitments that specifically focuses on mangrove and seagrass rehabilitation efforts. This part of the report will also highlight the gaps and possible opportunities that concerned groups can work on to help enhance the country's rehabilitation efforts and support its blue carbon ecosystem agenda.

#### Governance

The following agencies and bureaus are the management bodies responsible for various aspects of the rehabilitation of mangrove and seagrass resources in the country:

**National:** A variety of DENR Bureaus cover mangrove and seagrass restoration and rehabilitation efforts. For example, the **Ecosystems Research and Development Bureau (ERMB)** closely with the Forest Management Bureau (FMB) in the production and procurement of quality seedlings for the NGP, which had 2.4 billion allocated in 2023 to rehabilitate terrestrial and coastal forests. The ERDB has had to make major adjustments in the production of seedlings for mangrove rehabilitation projects in the past as the wrong use of mangrove seedlings for the NGP was one of the main reasons for its failure during its implementation in 2011-2019. The [Land Management Bureau \(LMB\)](#) is responsible for land surveys and classifications, as well as the management and disposition of alienable and disposable lands in the country. Despite having a separate bureau dedicated for land classification, it is apparent that there is still a lack of initiative to properly survey and classify large extents of mangrove areas according to its suitability. This gap has led to the unregulated and uncontrolled development of many mangrove areas that are supposedly unsuitable for such activities or the deforestation of areas which should be protected for their ecological significance.

**Local:** LGUs have some jurisdiction over aspects of mangrove management and implementation of community-based forest projects. Community-based projects, however, still need to follow the

guidelines set by DENR. This overlap in jurisdiction has led to many instances of conflict between DENR, BFAR and/or the LGU.

### **International Policy & National Commitments:**

DENR Administrative Order (DAO) No. 1, series of 2024, that provides guidelines for the immediate assessment of all abandoned, undeveloped, and underutilized fishpond areas released by the DENR to DA BFAR for Fishpond Purposes in Regions 5, 6 and 9. This is in relation to the determination of mangrove restorable areas in the Philippines.

Memorandum Circular from the DENR Secretary on the supplemental guidelines on enrichment planting of mangroves and related activities for biodiversity conservation and coastal resiliency. The MC also includes on the technical guideline on assessing areas that are suitable for mangrove reforestation.

**Fisheries Administrative Order 197-2**, which is a draft guideline that awaits the signature of the Secretary of the DA. It provides the utilization of AUUs into fishponds and salt farms. This is opposed by the Global Mangrove Alliance-Philippine Chapter since it is not aligned with the goal of mangrove restoration and biodiversity conservation.

### **Select Local & National policies and regulations**

**(Proposed Legislation)** [National Mangrove Forest Protection and Preservation Act of 2019](#). In 2022, a legislation called the National Mangrove Forest Protection and Preservation Act of 2019, also known as Senate Bill No. 639 was proposed in the Senate by then-Senator Francis Pangilinan. If ratified, this legislation is set to institutionalize the following:

- I. Establishment of mangrove reservation areas in all coastal areas of all municipalities in the country. The act seeks to declare all existing mangrove forests as part of the mangrove reservation area. This will complement many of the conservation NGOs' call to rehabilitate abandoned, underdeveloped and underutilized (AUU) fish ponds in the country. In the recent report presented by the Fisheries Regulatory and Licensing Division of BFAR, 75% or 8,305.4002 hectares of the areas that have been open for Fishpond Licensing Agreements are underutilized and underdeveloped. As per the FLA guidelines, unproductive areas with FLAs should be turned over to the DENR and may be reclassified as forest areas. However, the rehabilitation of a large part of these AUU ponds have not yet been done yet.
- II. Establishment of a National and Local Council for the Preservation of Mangrove Forests.
- III. Declaring as illegal certain acts such as cutting of mangrove trees, dumping of wastes, reclamation activity, illegal fishing, and others.

**At present, the Senate Bill is pending for review** by the Senate Committee on Environment, Natural Resources, and Climate Change and there have been no new updates to the progress of the proposed bill as of the writing of this report.

[The Expanded National Greening Program \(E-NGP\)](#). The DENR-FMB oversees the E-NGP, which aims to avoid failures of the first NGP (e.g, mono-specific seedlings, wrong choice of reforestation areas, and the failure to genuinely involve the community). DENR accomplishment reports show considerable improvement in implementation. Other bureaus of the agency have partnered with the FMB to ensure proper rehabilitation methodologies and minimized mortality rates. However, one of the main

indicators to gauge its success is the number of seedlings planted per year. This indicator does not reflect survival rates which will eventually determine if the rehabilitation effort successfully contributed to the country's total forest cover.

**(Proposed Legislations) [Low Carbon Economy Act of 2023](#).** At present, the Philippines does not have legislation to institutionalize the country's carbon crediting system, where mangrove and seagrass ecosystems may contribute. The current DENR Secretary, Sec. Ma. Antonia Yulo-Loyzaga, called for this legislation during 2022 UNFCCC COP27. In March 2023, a senate bill entitled the "Low Carbon Economy Act of 2023", or House Bill 1992, was filed by Senator Loren Legarda. The proposed legislation is expected to bring much needed attention to the restoration and preservation of the country's blue carbon ecosystems and its crucial role in climate change mitigation. The proposed legislation is currently pending with the Committee on Environment, Natural Resources and Climate Change and is another potential opening for a public policy grant from interested stakeholders.

**[National Convergence Initiative for Sustainable Rural Development Joint Resolution No. 06 of 2020](#).**

In March 2020, the National Convergence Initiative for Sustainable Rural Development (NCI-SRD), composed of the country's four main rural development agencies (DA, DAR, DENR, and DILG), made a joint resolution to create an inter-agency technical working group to address the policy issues of AUU fishponds who are under Fishpond Lease Agreements. The creation of the technical working group aims to address the issues hindering the conversion of AUU fishponds into more productive areas of the country. The inter-agency group is mandated to perform the following tasks:

- Consolidate maps on areas with FLAs from DA-BFAR and DENR-FMB.
- Consolidate the list of FLAs that have been abandoned for five years from the date of the lease contract by DA-BFAR.
- Consolidate the list of FLAs that have been rehabilitated under DENR's NGP.
- Validate AUU fishponds under an FLA from DENR.
- Strengthen coordination between DA-BFAR and DENR-FMB regarding areas FLA and the NGP.

The creation of the technical working group is seen as a first step in solving the problem of AUU mangrove areas in the country. In many instances, private individuals develop long abandoned fishponds, making it more challenging to revert the fishponds back to the forest reserve category. One of the aims of this resolution is to eventually hasten the reversal of AUU fishponds into forest reserves as this can greatly contribute to much of the country's internal and international commitments on biodiversity, blue carbon, and the blue economy.

However, during the Blue Carbon Roadmap Workshop conducted by DENR last March 2024, the government expressed its intention to no longer continue the reversion of AUU fishponds to original forest reserve category and pursue developing these lands into salt and/or aquaculture farms.

The programs, policies, and conservation initiatives presented in the section show how existing frameworks are extremely biased towards mangrove ecosystems alone. In fact, the government has never before invested in any kind of large-scale seagrass restoration effort in its long history of conservation projects. A few attempts have been made to bring attention to this equally important coastal resource, such as the **Philippine Seagrass Conservation Strategy and Action Plan** proposed by Dr. Miguel Fortes during the UNEP/GEF South China Sea Project (2002-2008). (Fig 25)



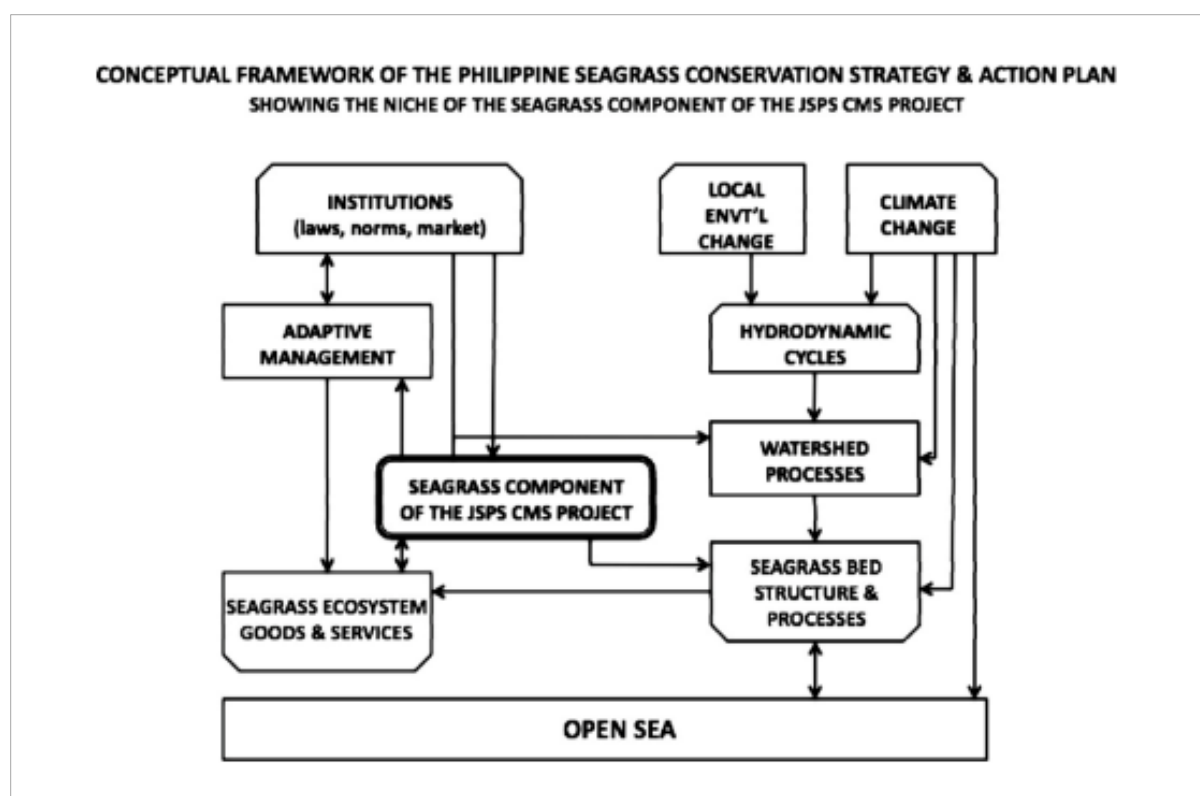


Figure 16. The proposed conceptual framework of the Philippine Seagrass Convention Strategy and Action Plan.

The Philippine Seagrass Conservation Strategy and Action Plan was supposed to guide the country's collective response to the UNEP/GEF South China Sea Project's goal of restoring 80% of the region's seagrass cover to the 1995 level. However, this proposal was never translated into public policy. A 2012 review on seagrass research in the Philippines reported decline at a rate of 2.62% or 39,100 km<sup>2</sup> yr<sup>-1</sup> reiterating the urgent need for government and all concerned entities to include, if not, to start prioritizing this highly threatened and underdeveloped resource. Mangrove and seagrass restoration efforts have continued, select non-exhaustive examples are listed below (Table 8).

Organization/s	Project Name	Project Details
(NGO) Zoological Society of London	<a href="#">Mangrove and Beach Forest Rehabilitation and Conservation</a> (2007-present)	ZSL has been working on mangrove restoration in the Philippines since 2007 and has one of the longest mangrove conservation projects by an NGO in the Philippines. Their projects have restored more than 900 ha of mangrove forests throughout the country. They have also produced mangrove restoration manuals to help promote community-led restoration efforts
GIZ (German Agency for International Cooperation)	Sustainable coastal protection through biodiversity conservation in coastal ecosystems affected by typhoons in the Philippines ( <a href="#">ProCoast</a> ) (2018-2022)	ProCoast is part of the International Climate Initiative (IKI) and is designed to support DENR's CMEMP. The program focuses on supporting policy development and innovative approaches to protecting mangrove forests and other coastal ecosystems in the Philippines. The ProCoast Project is also co-implemented by the Zoological Society of London.
(NGO) WWF - Philippines and Epsom Southeast Asia	<a href="#">Balabac Ecosystem Restoration Project</a> (2033-present)	The project aims to improve the target community's capacity to conserve their mangrove forests and address issues that directly affect mangrove ecosystems such as solid waste management.

(NGO) The Oceancy and the Oceanus Conservation	<a href="#">The Mangrove Restoration Project</a> (2021-2022)	The project aims to reforest 15,000 mangrove seedlings by the end of 2021, with an additional 20,000 by the end of 2022.
(NGO) Culion Foundation and the USAID Fish Right Program	<a href="#">GForest Mangrove Rehabilitation Project</a> (2022-present)	The project targets to restore mangrove forests in 15 barangays and selected marine protected areas in Coron and Culion, Palawan. This is expected to reforest and protect 128 ha of mangrove forests in the region.
(NGO) Conservation International and Global Mangrove Alliance	<a href="#">Green Gray Infrastructure</a> (ongoing)	This project aims to enhance coastal protection and rebuild coastal sediment through a combination of man-made structures (e.g. wave attenuation fences, etc.) and mangrove reforestation. As of 2022, the project has reforested over 11 ha of forest with 110,363 seedlings and established a 767.7 ha MPA
(NGO) Wetlands International	<a href="#">The Plant or Not to Plant Project</a> (ongoing)	This project is a collaboration with Macalajar Bay Development Alliance which focuses on ecological mangrove restoration by creating suitable conditions to allow mangroves to naturally settle and propagate.
(NGO) Forest Foundation Philippines	<a href="#">Tropical Forest Conservation Act Project (1 and 2)</a>	The FFP has funded small-scale mangrove rehabilitation projects in various localities in the Philippines since 2002. A complete list of these small-scale projects can be found in their website. <sup>95</sup>
(Government) DENR	Coastal and Marine Ecosystem Management Program (2017 – 2028)	The program aims to establish more MPA networks, improve the management strategies of its PAs, effectively reduce threats causing coastal degradation, and build capacity of its resource managers for both local and nationally managed protected areas.
(Private) The Trinity Project	EbA in watersheds, mangroves, and riverine ecosystem; alternative livelihood (2021-present)	Trinity Project is funded by Hijo Resources Corporation (HRC), a Davao-based diversified corporation. The project aims to plant 20 hectares of mangrove forest, cultivate 80 hectares of seagrass meadows, and create a fringing artificial coral reef environment in the coast of Tagum City, Davao del Norte.
(Private) SM Prime Development	2019-present	The project targets to preserve more than 10,000 mangrove trees within the Hamilo Coast estate in Batangas
(Private) San Miguel Corporation	2020-present	The project planted a total of 190,000 mangroves in 76 hectares of shoreline in Bulacan and Central Luzon.

**Table 8.** Example of recent mangrove restoration / conservation projects operating in various localities in the Philippines. This list is not-exhaustive and only representative of a small selection of efforts across public and private sector and civil society.

## 4.4 Coastal Fisheries

The country's coastal fisheries sector comprises mainly three sub-sectors: (1) commercial fisheries, (2) municipal fisheries, and (3) aquaculture. Commercial fisheries refer to fishing operations using vessels over 3 GT conducted outside the municipal waters, which are further classified based on the gross tonnage of their fishing vessels (small, medium, and large commercial fishers). Municipal fisheries, also known as small-scale fisheries, refer to fishing activities that use smaller vessels (3 GT or less) and are done within municipal water boundaries.

Per the Fisherfolk Registration (FishR) and Boat Registration (BoatR) of the DA BFAR in 2022, there are 336,780 registered municipal fishing boats, about 71% of which are motorized while 29% are non-motorized. Meanwhile, there are 8,050 registered commercial fishing vessels, of which 53% are small-

<sup>95</sup> <https://www.forestfoundation.ph/projects/>

scale commercial, 43% are medium-scale, and 4% are large-scale. In 2019, the Philippines was ranked as the 8th top-producing country in the fisheries sector, with a total annual production of 4.41 million metric tons (MT) of fish, molluscs, crustaceans, and aquatic plants for that year.

In the latest national fisheries profile published by BFAR (2022), the country's total coastal fisheries output was valued at PhP 326.57 billion, contributing a 12.82% share to the total GVA of the agricultural sector (Table 12). Aquaculture contributed the highest volume and value among the three sub-sectors, making up 54.15% of the total fisheries output for that said year. This was followed by municipal fisheries production at 1,126,260.25 metric tons, which is 25.96% of the total fisheries output. Commercial fishery reportedly had the lowest production value at 862,686.33 metric tons, which is 19.89% of the total fisheries production.

Sub-sector	Volume (MT)	Value at Current Prices ('000 PhP)
Aquaculture	2,349,252.01	124,002,547.45
Capture fisheries	1,988,946.58	202,564,986.40
Commercial fisheries	862,686.33	74,931,961.99
Municipal fisheries	1,126,260.25	127,633,024.41
<b>TOTAL</b>	<b>4,338,198.59</b>	<b>326,567,533.85</b>

**Table 9.** Fisheries production in terms of volume and value in 2022. Source: BFAR, 2022

Despite the considerable contribution of the coastal fisheries to the Philippine economy, commercial, municipal, and small-scale fisheries remain one of the most vulnerable sectors in the country. The open nature of Philippine fisheries has led to significant degrees of overfishing while widespread habitat degradation in coastal areas has also contributed to decreasing fish catch. This is especially apparent in the declining production from the commercial fisheries sector in the past years which have led the government to ramp up its aquaculture production to make up for the country's demand for fish products. Municipal fisherfolk, on the other hand, are a highly marginalized group despite being considered as the backbone of the Philippine fishing industry.

## Governance

**National:** The national governing body responsible for the development of the country's agricultural sector is the **Department of Agriculture (DA)**, which also includes the fisheries research and technical training arm: **National Fisheries Resource and Development Institute (NFRDI)**, and the policy recommending body on matters related to fisheries and aquaculture: **National Fisheries and Aquatic Resources Management Council (NFARMC)**. It is composed of representatives from the DA-BFAR, the Department of the Interior and Local Government (DILG), the commercial fisheries sub-sector, the municipal fisheries sub-sector, processors, aquaculture, academe and NGOs. At the city and municipal level, FARMCs are also formed and serves as policy recommending body to the municipal/city LGUs.

Other fisheries-related tasks are allocated across agencies. BFAR, for example, is responsible for fisheries resources and executes fisheries-related policies and projects. One recent project initiative by BFAR is the Philippine Fisheries and Coastal Resilience Project (FishCore Project) which aims to

address the structural weaknesses in the fisheries value chain and improve the overall resilience of the fisheries sector. Additionally, the **Philippine Fisheries Development Authority (PFDA)** is the government body mandated to develop post-harvest infrastructures and other facilities required to help boost the total fish production.

**Sub-National: Fisheries Management Bodies of Fisheries Management Areas (FMAs)**, by virtue of Fisheries Administrative Order 263, the Philippines is divided into 12 FMAs with its own Management Bodies. They function primarily to develop Harvest Control Measures suggested by the Science Advisory Group. As of 2022, the country's fishery sector was reported to contribute 1.52% to the country's GDP. However, many experts believe that the current governance structure is insufficient to properly manage such a huge industry. Multiple calls were made from industry stakeholders (2022 - 2023) to create a separate department-level agency specifically dedicated to developing the fisheries sector. Many people from the fisheries industry believe that a higher-level governing body will increase capacity and resources to fully modernize the fishing industry. Despite the repeated call for such a restructure, the government has not put this discussion into its agenda.

**Local:** LGUs manage fisheries activities within municipal waters, which are defined as the area found within the first 15 kilometers from the shoreline according to the Fisheries Code. Under this code, LGUs are given the authority to enforce fishery laws, including the protection of their municipal water boundaries from commercial fishing activities. However, there is a loophole in the legislation as it allowed certain LGUs to open a portion of their municipal waters (usually the area between 10.1 km to 15 km from the shoreline) to commercial fishing activities. This has become a cause of dispute between the LGUs, local small-scale fishers, and concerned groups. This is especially problematic for coastal towns that are found inside NIPAS area where the jurisdiction not only intersects with BFAR but with the NIPAS Management Board as well. One example of this is that of Tañon Strait Protected Seascape where 2 LGUs were reported to open their municipal water boundaries to commercial fishing vessels. Aside from this, there is also an overlapping jurisdiction and conflicting policies between municipal waters defined under RA 8550, as amended by RA 10654 and the ancestral domain that includes the ancestral waters under the Indigenous Peoples Rights Act (IPRA) or RA 8371.

### International Policy & National Commitments

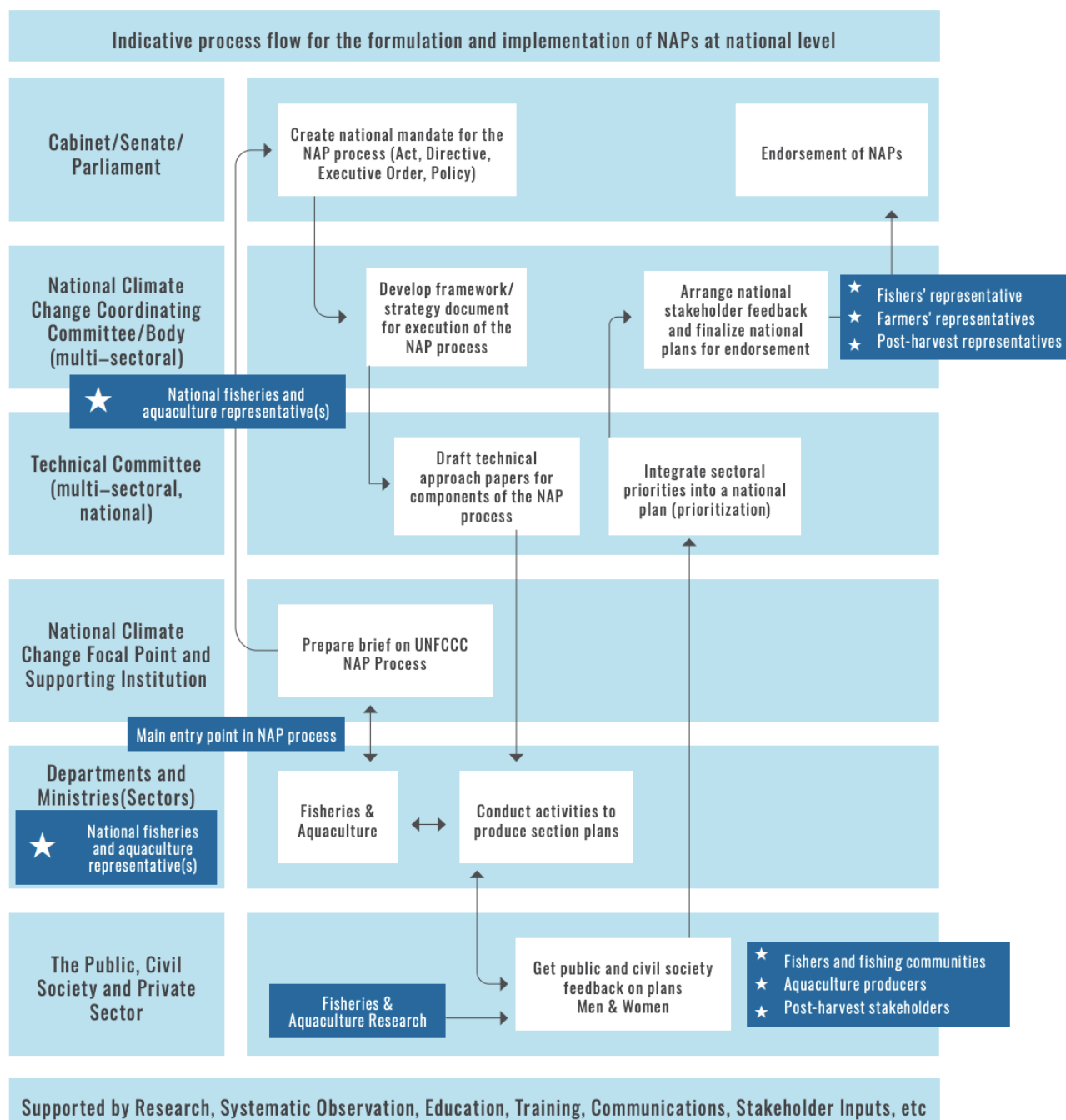
This analysis synthesizes international policies and frameworks related to the thematic topics in this analysis relevant to coastal and marine ecosystems, including fisheries, in the crosscutting section 5. Specific to fisheries and aquaculture in a climate change context, this topic aims to enhance integration in an adaptation or resilience context. National Adaptation Plans (NAP) or the adaptation section of a Nationally Determined Contribution (NDC) are reports that could enhance and clarify the connections. This is a fairly new endeavour to strengthen the connection between fisheries and climate change. For example, in June 2023, the FAO partnered with DA at a "Climate Change Adaptation Planning for the Fisheries and Aquaculture Sector" workshop. It convened relevant government units to discuss the contributions of the coastal fisheries sector to achieving the country's NDC. Figure 26 shows the proposed placement of the fisheries and aquaculture sector in the formulation of the NAP by FAO.

**World Trade Organization.** The Philippines has been a member of the World Trade Organization (WTO) since 1995. The main government agency facilitating this partnership is the Department of Trade and Industry (DTI). Since its membership in 1995, the Philippines has signed several agreements

with WTO related to intellectual property, trade facilitation, and many others. However, the very first fisheries-related agreement between the two bodies only began in February 2024 when the Philippines officially ratified the Agreement on Fisheries Subsidies under the World Trade Organization. This agreement formalizes the country's commitment to grant subsidies to fisher folk impacted by natural disasters. Apart from that, this also sets new multilateral rules to avoid the use of harmful subsidies— which are considered as one of the main drivers for fish stock depletion. Currently, the harmful subsidies identified in this agreement only involve IUU fishing activities while those that concern overfishing and overcapacity has not yet been covered.

**Southeast Asian Fisheries Development Center.** The Philippines is also part of the Southeast Asian Fisheries Development Center (SEAFDEC), which is an autonomous inter-governmental body aimed at promoting sustainable fisheries and aquaculture in Southeast Asia. SEAFDEC comprises 11 member countries and the Philippines is home to its Aquaculture Department. Its main research station in Tigbauan, Iloilo has been conducting research and training programs on a wide range of aquaculture disciplines for local and international aquaculture farmers since the 1970s.





**Figure 17.** Schematic that demonstrates where fisheries and aquaculture sector could be engrained or contribute to the formulation process of National Adaptation Plans. Image source: FAO, 2020<sup>96</sup>

<sup>96</sup> FAO. 2020. [Addressing fisheries and aquaculture in national adaptation plans - Supplement to the UNFCCC NAP Technical Guidelines](#)

## Select Local & National policies and regulations

[The Philippine Fisheries Code](#), also known as Republic Act 8550, is the legislation that formalized the development, management, conservation, and utilization of the country's fisheries and aquatic resources. The primary agency tasked to perform and implement this mandate is DA-BFAR. The following programs were institutionalized:

- Issuance of licenses for fishery activities
- Prescription of catch ceiling limitations and closed fishery seasons
- Delineation of municipal waters and the granting of fishery privileges within the said area strictly to municipal fishers
- Establishment of Fisheries and Aquatic Resources Management Councils (FARMCs) at various levels: national (NFARMC), municipal (MFARMC) or city (CFARMC)
- Guidelines for the importation/construction of new commercial fishing boats
- Incentives for commercial fishers to fish further out in the country's EEZs Aquaculture guidelines (e.g. fishpond lease, incentives for sustainable aquaculture practices, etc.

In 2014, the Fisheries Code was amended due to its failure to address illegal, unreported, and unregulated (IUU) fishing activities in the country. This call for amendment was primarily driven by the European Union's issuance of a yellow card to the Philippines in 2014 for its failure to regulate and ban IUU fishing. The yellow card served as a warning to ban Philippine fishery imports in the EU market should the issue on IUU be unresolved. The amended code, now known as [Republic Act 10654](#), implemented stricter regulations against these activities such as: (1) the establishment of a carrying capacity and maximum number of vessels allowed to fish in an area, (2) creation of a vessel monitoring system for commercial fishing boats, and (3) implementation of harsher penalties for IUU fishers.

President Ferdinand Marcos, Jr. recently expressed the administration's intent to amend the existing code and open a portion of the municipal waters to commercial fishing activities. This is believed to help increase commercial fishery production — which has been declining over the years. The municipal water boundary was intended to secure the livelihood of small-scale and subsistence fishers who are purely reliant on nearshore fishing areas. There are mixed opinions to the administration's move as this will surely affect the productivity of small-scale fishers, who are already considered one of the country's most marginalized groups.

It should be noted that features and mandates in the Fisheries Code overlap with those given to the DENR. Listed below are some examples of the overlapping mandates between these two agencies:

- The classification of fishery areas
- The classification of rare, threatened, or endangered species
- The formulation of an integrated coastal management framework
- The establishment and monitoring of water quality standards
- One specific instance where this overlap in jurisdiction became problematic was during the oil spill disaster in the Verde Island Passage in 2023 where LGUs were confused as to where to source information from water quality tests, which should help them in deciding to open or close fishery activities in their borders.

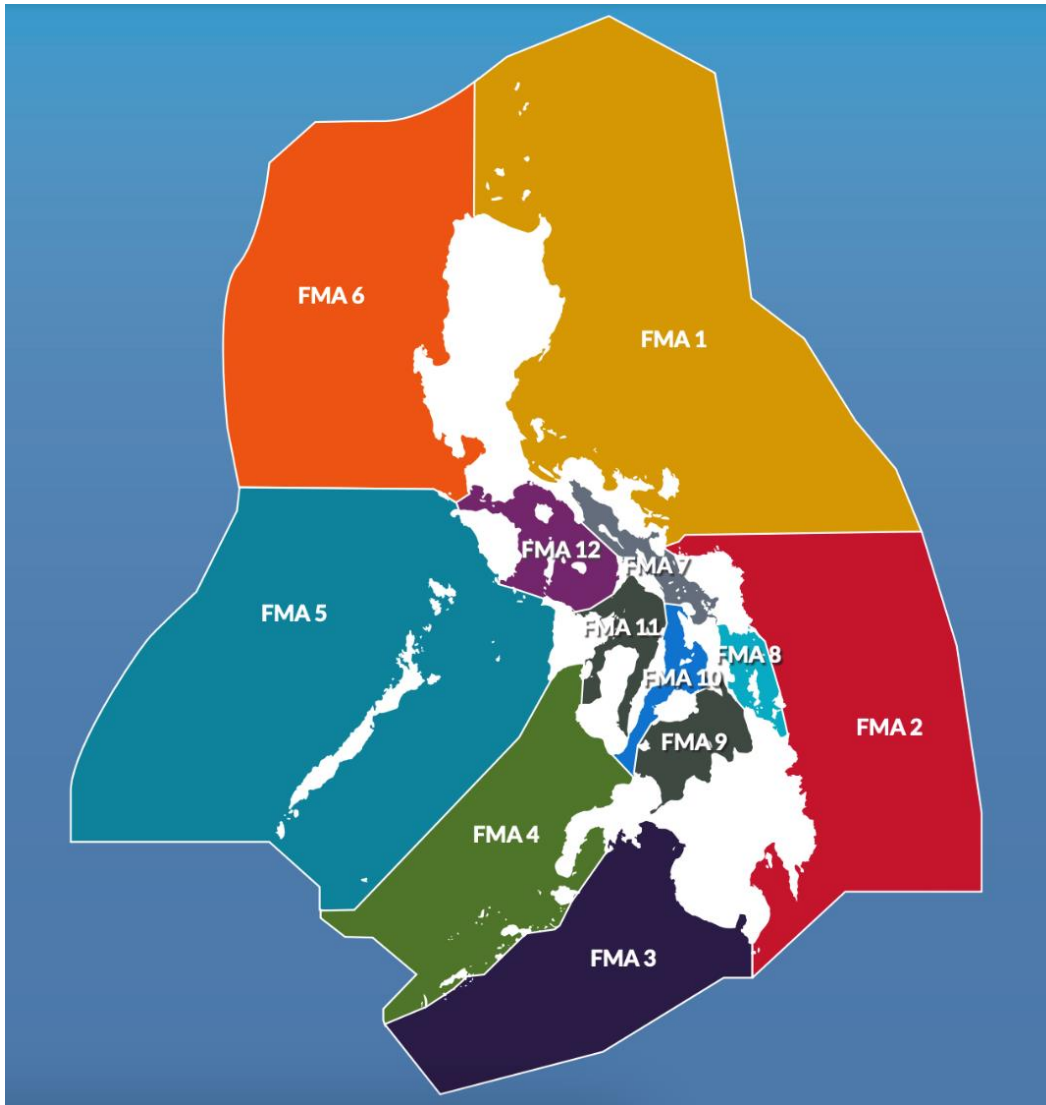
One other important legislation that was created to support the implementation of the Fisheries Code is the [Agriculture and Fisheries Modernization Act of 1997](#) (AFMA), also known as Republic Act No. 8435. This legislation paved the way for the modernization of both the agriculture and fisheries sectors

in the country. RA 8435 identified Strategic Aquaculture and Fisheries and Development Zones (SAFDZ) and provided programs for human resource development, as well as trade and fiscal incentives to boost the country's agriculture and fisheries production. However, some experts believe that the AFMA has failed to fully develop the country's fisheries industry to its maximum capacity. The non-observance of area-based planning and the failure to modernize the country's agriculture production system are just a few of the gaps that this legislation has yet to address, and the benefits of the legislation have still yet to be seen on the ground. Up until now, Filipino farmers and fisherfolk are still one of the poorest and marginalized groups in the country.

The [Comprehensive National Fisheries Industry Development Plan](#) created by the Department of Agriculture is the main document that lays out the country's comprehensive framework for the development of its fisheries sector. The framework provides strategic directions for the fisheries sector and identifies priority projects to be implemented every 5 years (the current document covers the years 2021-2025). The development plan divides its strategies and approaches according to the different fisheries sub-sectors of the industry, namely commercial fisheries, municipal fisheries, and aquaculture). The programs for prioritization are largely based on the gaps identified and feedback given by key stakeholders in the industry. In this recent version of the document, the lack of compliance and proper implementation of fisheries laws, lack of monitoring and evaluation systems, limited access to financial & market support, and environmental degradation are common issues reported in all three sectors. Much of the strategies and action plans laid out in this framework focus on remediating these recurrent issues.

In an effort to further improve fisheries management and promote coordination among the different regions and towns in the Philippines, the BFAR released the [Fisheries Administrative Order No. 263 \(FAO 263\)](#) in 2019 which divided the Philippine seas into 12 different fisheries management areas (FMA) (Fig.27). This management strategy is meant to promote coordination among towns and municipalities belonging to the same regions in managing its fisheries resources. Each management area is expected to accomplish the following mandates:

- establish its own governance structure which should be properly represented by all concerned stakeholders, including a scientific advisory group
- develop its own management plan to guide BFAR regional offices, LGUs, fisherfolk, industry players, and other key stakeholders;
- establish reference points or critical range of values of performance indicators of fish; and
- create its own harvest control rules (HCRs)



**Figure 27.** Map of the 12 Fisheries Management Areas (FMA) in the Philippines. Image source: BFAR.

The effectiveness of each FMA is periodically assessed by a Fisheries Management Scoreboard which makes use of indicators on governance, accountability, stakeholder participation, and policy implementation for scoring. There are some FMAs that are more active in implementing their FMA strategies than others. FMA 8, which covers Regions 8 and 13, is noteworthy as it publishes its activities and management score on a dedicated website. As of March 2022, it has a score of 22 out of 40 (category: good) under the FMA Scorecard metrics.

There are also other supporting frameworks, such as the Comprehensive Post-Harvest Marketing and Ancillary Industry Development Plan and a National Plan of Action for Small Scale Fisheries (supported by UN-FAO), that are in draft form and awaiting the DA secretary's approval.

## 4.5 Financial Mechanisms Related to Ecosystem Protection

*“The Philippines is pushing for accelerating climate finance. To be able to do that, we need to collaborate — the government, all countries, private sector, and philanthropic organizations, and really identify how we can achieve much-needed resources to implement Nature-based Solutions on the ground. [...] We should acknowledge that the purpose of Nature-based Solutions is to deliver affordable and scalable actions at the community level to fight against climate change.”*

— Analiza Rebuelta-Teh, Department of Environment and Natural Resources (DENR) Undersecretary for Finance, Information Systems and Climate Change, UNFCCC COP28 Dubai, UAE

The Philippines established a roadmap for sustainable financing which supports the position that there is vital need to transform into a “more sustainable and environmentally mindful society.” A transformational change that takes a whole-government and whole-society approach is important given increasing population, degraded natural resources, and increasingly severe weather events due to climate change. Mobilizing the financial resources necessary to support this transition and prioritize sustainable activities requires new and innovative approaches to investment and finance.

This section focuses on the financial mechanisms that can support coastal and marine ecosystems and their relevant ecosystem services, including but not limited to climate mitigation. The economic valuation of ecosystem services of coastal and marine ecosystems was covered in Section 4.2: Sustainable Blue Economy. Sustainable finance that takes a whole-society approach considers the natural asset valuation of ecosystems for biodiversity, climate, food, and livelihood benefits. For example, one hectare of intact, healthy mangrove forests in the Philippines can provide an average of US \$3,200 per year of flood reduction benefits.<sup>97</sup> Without protection and restoration efforts for mangroves, damages to residential areas could increase by 28%, or more than US \$1 billion annually in floods and infrastructure destruction.<sup>98</sup>

One financial mechanism relevant to coastal and marine ecosystems is the ongoing discussion around if and how carbon credits or trading should be considered in the Philippines for voluntary carbon market or the compliance market. For example, a study by the International Monetary Fund highlighted that the Philippines could generate up to \$7 billion in revenue through carbon pricing. While that figure is not exclusively around nature-based carbon credits, it is a part and would further contribute to associated emission reductions. The DOF and DENR are actively exploring carbon pricing options through a working group established in early 2024. However, it is well recognized that the need for carbon pricing and trading must be carefully designed with environmental and social safeguards and alignment with the Philippine NDC.

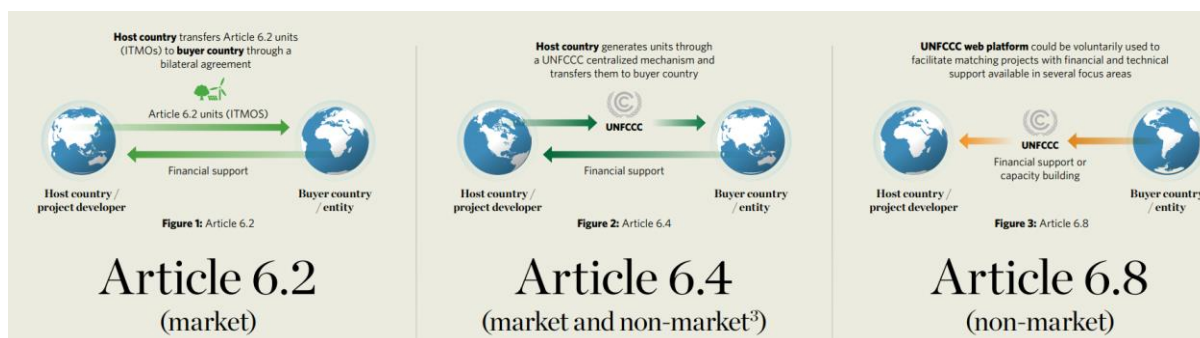
Within the context of carbon markets contributing to the NDC, Article 6 under the UNFCCC is the main body that allows for market and nonmarket approaches for the purpose of generating revenue and meeting Paris Agreement targets. Figure 28 explains the difference between Article 6 mechanisms: 6.2 cooperative approaches with a transfer, 6.4 sustainable development mechanism (e.g., replacement of Kyoto Protocol’s Clean Development Mechanism), and 6.8 non-market approaches.

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<sup>97</sup> WAVES. 2017. [Valuing the Protection Services of Mangroves in the Philippines: Policy Brief](#).

<sup>98</sup> *ibid*, 95





**Figure 28.** Description of the different carbon market approaches under Article 6 of the Paris Agreement, UNFCCC highlighting market and non-market approaches, the flow of financial support, and who can ‘claim’ the emission reduction towards their NDC targets.

Source: Granziera, B. et al. 2022. [Article 6 Explainer](#).

## Types of Financial Mechanisms

**National Funds and/or Budgets** secure domestic financial resources to establish a national fund and can be combined with other public or private sources for a blended finance. National Funds can cover a range of focal areas, such as climate resilience. This category includes a wide range of financial elements, including annual budgets. Select examples of a national level fund are:

- **People’s Survival Fund (PSF).** The Republic Act 10174 of 2012 established the PSF to provide long stream finance for adaptation projects of LGUs and local/community organizations aimed at increasing resilience of communities and ecosystems to climate change. It is managed and administered by a PSF Board that the DOF heads. The Board also includes representatives from the CCC, DBM, NEDA, Department of the Interior and Local Government, Philippine Commission on Women, academe and scientific community, business sector, and NGO. There is an annual allocation of at least PhP 1 billion pesos, which can be augmented through donations, endowments, grants and contributions. In 2023, the Board approved PHP 539 million-worth of new climate adaptation projects, including for a mangrove rehabilitation project in Catanauan, Quezon (PHP 2.63 million)<sup>99 100</sup>
- Other examples include: National Disaster Risk Reduction and Management Fund (NDRRM); and Integrated Protected Area Fund (IPAF)

**Risk Transfer Mechanisms, such as Parametric Insurance** provides pay-outs based on the occurrence and intensity of a hazard event, as a proxy for impact and loss, rather than indemnifying against actual loss (which is the traditional insurance approach). This allows payment to be made within weeks of an event occurring. It is well-established that speed is essential for effective disaster recovery, and that programs enabling quick cash transfers to beneficiaries can enhance resilience, enable building back better and faster, and alleviate poverty in the long-term.

- **Weather index-based parametric insurance for small-scale fishers in the Philippines** (Pilot project; 2022 – 2024). Rare and WTW, in collaboration with DA-BFAR and PCIC, with support from the governments of UK and Canada via the Ocean Risk and Resilience Action Alliance (ORRAA), are piloting a parametric insurance product that helps fishers adapt to climate

<sup>99</sup> Department of Finance. 2023. People’s Survival Fund Board approves PhP 539-million worth of climate adaptation projects.

<sup>100</sup> People’s Survival Fund. <https://climate.gov.ph/our-programs/climate-finance/peoples-survival-fund>

change by providing financial protection from lost income incurred due to bad weather days which prevent safe fishing.<sup>101</sup>

- Other examples include: ADB's Coral Reef Insurance Project; GIZ's Ecosystem-based adaptation and climate insurance project; and World Bank's Parametric Catastrophe Risk Insurance Program Pilot

**Public Policy Loans, or policy-based loans.** These types of loans support sectoral or multi-sectoral policies at the national level and support the design or implementation of public policies and related technical cooperation.

- **Philippines First Sustainable Recovery Development Policy Loan (DPL)** from the World Bank for USD \$750 million in 2023. It aims to attract investment in renewable energy, support plastic waste management, promote green transport, and reduce climate-related fiscal risks from the agriculture sector. An example that contributes to this DPL is implementation support of a new Extended Producer Responsibility Act aiming to reduce plastic packaging waste by 2028.<sup>102</sup>
- Other examples include: Philippine Fisheries and Coastal Resiliency Project (FishCORE)

**Sovereign Wealth Fund** is typically a state-owned financial instrument that is comprised of capital generated by the government. It often originates from commodity exports (ie., oil and gas), and intended to support sustainable financing for the country's future. Example:

- **Maharlika Investment Fund (MIF)** is the Philippines' first-ever sovereign wealth fund that was approved by the Senate and House in May 2023. It intends to create a long-term source of investment capital to stimulate economic growth and create jobs, and the revenue generated would support the further development of agriculture, climate resilience, digitalization, and energy.<sup>103</sup> There is potential for enhancing MIF's alignment with ecosystem protection and broader environmental sustainability goals. Drawing inspiration from the approach of Dutch pension fund managers APG and PGGM, the MIF could benefit from integrating a more explicit and measurable commitment to investing in projects and initiatives that directly contribute to ecosystem preservation and restoration. By developing and applying a clear taxonomy for sustainable development investments, similar to that of APG and PGGM, the MIF could ensure that its investments not only avoid significant harm but also actively support the conservation and enhancement of the Philippines' rich biodiversity and natural resources.

## Bonds

- **Green, Blue, Sustainable Bonds** are investments where investors lend money to entities like corporations or governments in return for periodic interest payments and the repayment of the bond's principal at maturity. Characterized by their principal, interest rate, maturity date, and issuer, bonds are a type of fixed-income security that offers regular income to fund projects or operational requirements. There is a range of different types of bonds: blue, green, social, sustainable. Typically, green or blue bonds focus on projects with an environmental and/or social benefit, such as energy efficiency, green transport, the protection of the national environment, and biodiversity conservation.

<sup>101</sup> Ocean Risk and Resilience Action Alliance, Rare and WTW. [Weather Index-based Parametric Insurance for SSF](#).

<sup>102</sup> Philippine News Agency. June 2023. [World Bank approves policy loan for climate resilience](#).

<sup>103</sup> CSIS. August 2023. [Unpacking the Philippines' New Sovereign Wealth Fund](#).

**Multilateral Funds** are growing as a channel for development co-operation, which often includes combined public sector finance with an international agency to implement or manage the funds. While there are many examples, one specific to blue carbon is:

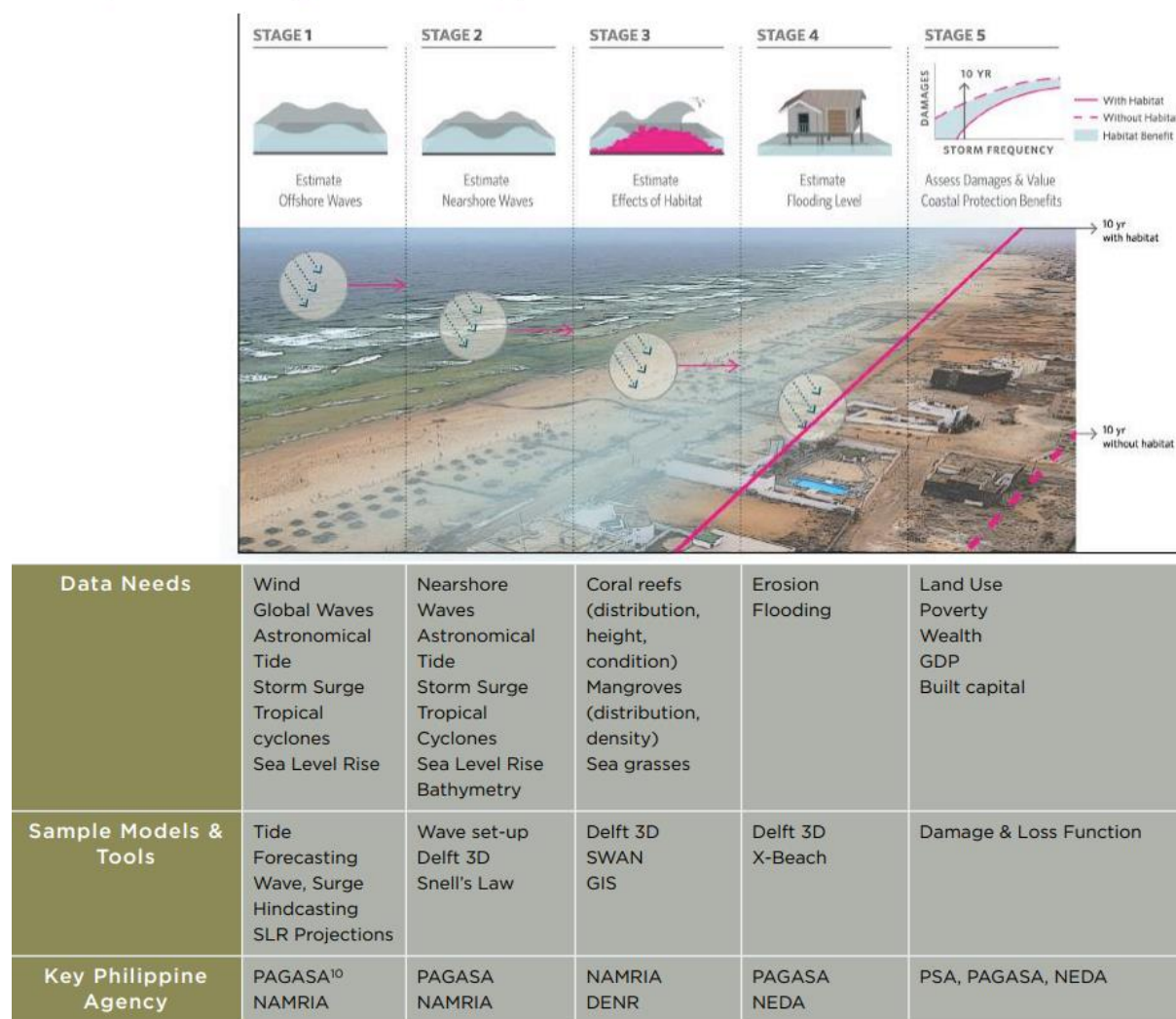
- **Blue Carbon Accelerator Fund (BCAF)**, established in 2021 by Australia and the IUCN, is a dedicated funding scheme to support blue carbon restoration and conservation projects in developing countries and pave the way for private sector financing. The BCAF has two funding portfolio, one focused on implementation of blue carbon activities, and the other focused on readiness which supports projects laying the foundation and enabling conditions for successful project design and implementation. See TSPS Case Study on page 77.
- Other examples include: Adaptation Fund, Climate Investment Fund, GEF, and the GCF

**Carbon credit projects** – While there are no operational blue carbon credit projects in the Philippines to date, the interest and efforts to establish the necessary enabling conditions to design the first on ongoing. However, some NGOs in the Philippines encourage the focus to be on disaster risk reduction rather than carbon pricing. Example of current efforts include:

- **Technical Working Group Meeting for Preparing Carbon Pricing Instruments.** In January 2024, the DOF together with the World Bank and other partners held a technical meeting to explore the possibilities of developing a carbon pricing instrument, whether carbon tax, carbon credits, or emission trading. The DOF sees carbon pricing as a powerful fiscal tool that enables a bridge to meaningful climate action and a sustainable economy.

Beyond the variety of financial mechanisms, another core part that ensures the integrity and quality of results is the underlying data needs and tools. Many of which are covered in Section 3: Tools and Resources. Figure 29 below further demonstrates how an insurance or bond might identify key metrics that will allow it to demonstrate effectiveness. These metrics would be critical for assessing progress and equitable fund distribution.

## The Expected Damage Function Approach



**Figure 29.** Key steps, critical data, and key agencies for the Expected Damage Function Approach. It also shows how one might assess the value of mangrove forests by understanding the expected damage with and without intact habitat. It outlines key data needs which could be considered as a metric in some financial mechanisms. Source: WAVES<sup>104</sup>

## Governance

**National:** The **Department of Finance (DOF)** recently became an active champion for nature-based solutions, like mangrove protection and restoration, especially with a gender-responsive approach necessary to close the climate finance gap.<sup>105</sup> This recognition was highlighted during the UNFCCC Dubai COP28, where representatives from the DOF participated highlighting the critical connection between finance and climate solutions. Additionally, the DOF is one of the primary agencies responsible for leading the 2024 Technical Working Group on carbon pricing instruments in the Philippines. The **Bangko Sentral ng Pilipinas (BSP)** is the central bank and monetary authority in the Philippines, and issued BSP Circular No. 1085 in 2021, the Sustainable Finance Framework,<sup>106</sup> which requires banks to offer sustainable finance products and recognizes that climate impacts and other

<sup>104</sup> WAVES. 2017. [Valuing the Protection Services of Mangroves in the Philippines: Policy Brief](#).

<sup>105</sup> Department of Finance. December 2023. [DOF Actively champions gender-responsive solutions to close the climate finance gap](#).

<sup>106</sup> Republic of the Philippines. 2021. [Sustainable Finance Framework for the Philippines \(2021\)](#).

social and environmental risks pose a concern for financial stability and thus have identified opportunities to include the elements in investment decisions, including the protection and restoration of mangrove or seagrass areas.”<sup>107</sup> The associated resource is the Sustainable Finance Roadmap and Guiding Principles<sup>108</sup> that helped pre-empt the finance framework.

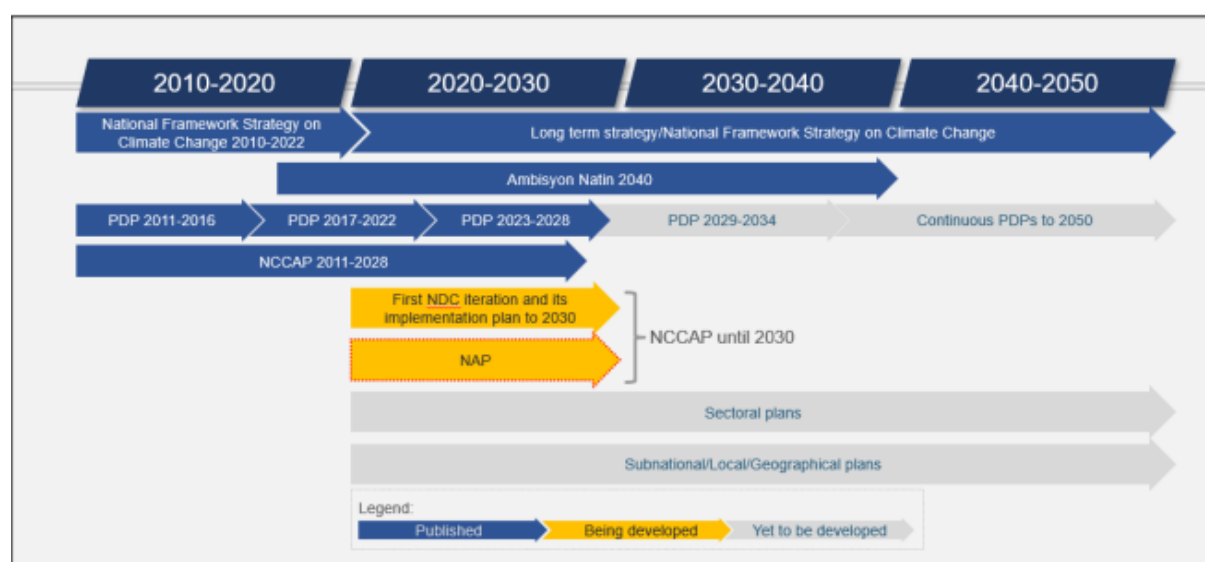
The **DENR-FMB** undertakes studies related to the economics of forest-based activities and industries and provides recommendations related to the potential increase in fees for permits/lease (e.g., annual rental of PhP 300/hectare on the 6th to 10th year for Socialized Industrial Forest Management Agreement (SIFMA) and PhP 150.00/hectare for 1-5 hectares for permits) as a means of increasing funding for biodiversity.<sup>109</sup>

## Section 5: Crosscutting Elements

### 5.1 International Policy

#### International Policies and related National Commitments related to coastal ecosystems

Given the crosscutting nature of international treaties and frameworks, and the underlying national plans and commitments, we present selected international frameworks here alongside a brief description of coastal ecosystem relevant topics and the anticipated next phase to align with the common timeframe of the international community.



**Figure 18.** Demonstrating the Philippine Climate change plans and frameworks as outlined by the current National Adaptation Plan (NAP) that will be finalized in 2024 (2023 - 2050)

For example, the Philippine 2021 NDC to the UNFCCC committed to undertake adaptation measures in its coastal and marine ecosystems and the biodiversity sector.<sup>110</sup> The development of the NDC is a

<sup>107</sup> Z., Maria Angela G et al. 2021. [Financing Ecosystem-based Adaptation in the Philippines. In Financing and Valuating Ecosystem-based Adaptation in the Philippines: A Handbook for Banks and Financial Institutions.](#)

<sup>108</sup> BSP. 2020. [Sustainable Finance Roadmap and Guiding Principles \(2020\)](#)

<sup>109</sup> Biofin. 2014. The Biodiversity Finance Initiative

<sup>110</sup> [Republic of the Philippines Nationally Determined Contribution Communicated to the UNFCCC on 15 April 2021.](#)



cross-departmental approach given the relevance of climate action for biodiversity, development, energy, land use, and others, and it ensures collaboration and integration of other relevant national targets. Figure 30 illustrates the alignment of climate-related national frameworks and the iterative revision processes through 2050.

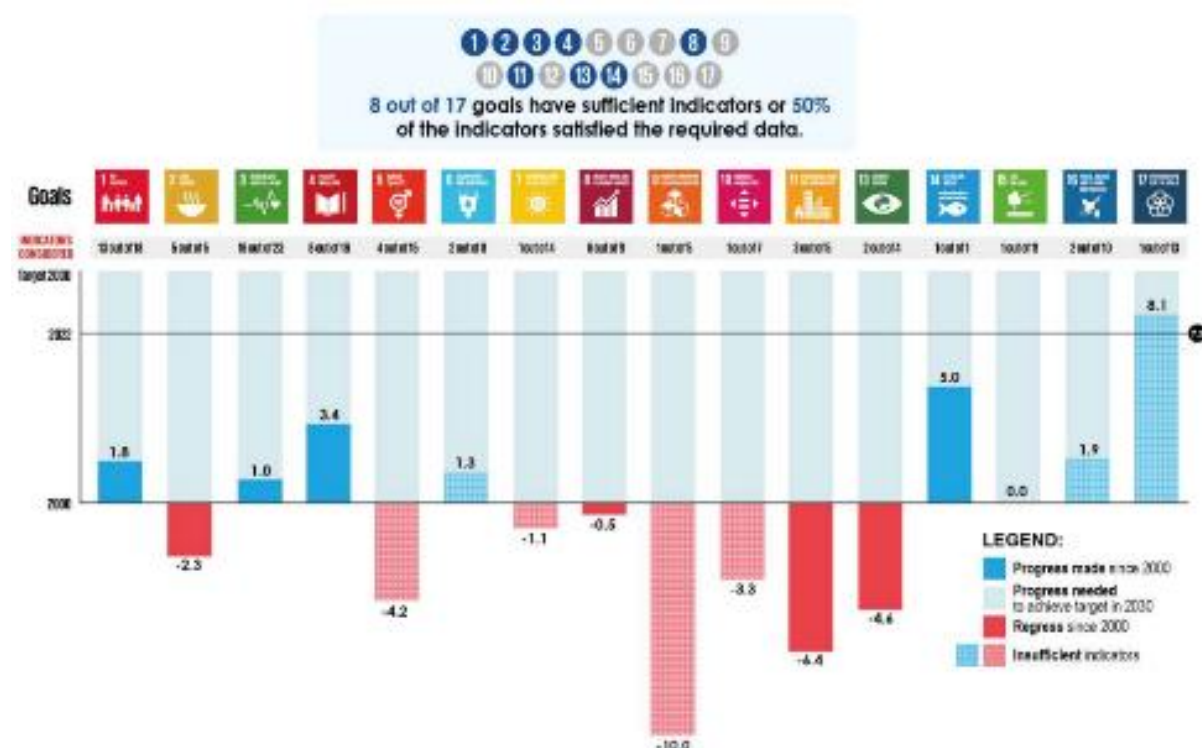
International commitments have many crosscutting priorities and interrelated actions. For each UN or international treaty, Parties or signatories are required to submit national reports outlining commitments and plans to achieve the global goals including climate change, biodiversity, ocean action, wetland conservation, high seas conservation, and sustainable fisheries. Examples from each are listed below with select targets or commitments demonstrating the interconnected nature and importance of interagency cooperation to achieve global and national goals.

Report	Description (Select relevant examples)
<p><b>NDC - UNFCCC</b></p> <p>Current NDC: 2021 – 2025</p> <p>Updated NDCs are expected ahead of COP30 (2025)</p>	<p><b>Mitigation:</b> Reduce and avoid 75% of its projected greenhouse gas emissions for the period of 2020 to 2030. Of the target, 2.71% of actions are unconditional, the remaining 72.3% are conditional (with international support). The sectors addressed in the mitigation section of the 2021 – 2025 NDC includes agriculture, waste, industry, transport and energy. LULUCF is not included in emissions estimates.</p> <p><b>Adaptation:</b> The NDC identifies agriculture, forestry, coastal and marine ecosystems, biodiversity, health, and human security as priority areas, which further aligns with the 7 thematic adaptation areas in the National Climate Change Action Plan (2011 – 2028). Coastal ecosystems. The NDC indicates how adaptation actions may also include mitigation co-benefits, which is an important hook for the inclusion of blue carbon mitigation action in the NDC, specifically in the Transparency Framework reporting.</p> <p><b>Finance:</b> The Philippines acknowledges its interest in exploring market and non-market mechanisms under Article 6 for opportunities to enhance climate ambition and generate finance. Additionally, the Philippines highlights forest restoration as an opportunity to access results-based finance in conservation. While not specified, this includes mangroves.</p> <p><b>Fisheries:</b> Aquaculture and fisheries are not directly specified. Sustainable and climate-smart fisheries are indirectly included via the adaptation actions in the coastal and marine ecosystems theme and could also be inclusive of the adaptation agriculture actions. This is an area that the Philippines can utilize to enhance its overall ambition of the upcoming revised NDC in 2025.</p> <p>DENR has set its priority adaptation measures to align them with the National Climate Change Action Plan (the NCCAP is also currently being revised to align with the NDC).</p>
<p><b>National Adaptation Plan (NAP) - UNFCCC</b></p> <p>2023 – 2050 (not yet finalized)</p> <p>Update every 5 years</p>	<p><b>Ecosystems and Biodiversity:</b> All ecosystems, including mangrove forests, need to be protected for biodiversity, livelihood, and other values/services. The adaptation theme is “Safeguard Biodiversity: Restore Natural Assets” which highlights the need for ecosystem accounts and to enable and empower communities to protect and manage their natural assets. DENR is specified as the lead agency supported by DOST, NEDA, PSA, and others.</p> <p><b>Fisheries:</b> While the NDC didn’t specify fisheries and aquaculture, the NAP is considered the adaptation section of the NDC and highlights one of its key outcomes as “natural resources critical for agriculture, aquaculture, and fisheries conserved” with the lead agency specified as DA (supporting agencies: DENR, DOST, DILG, and DHSUD) Within that outcome, research on “integrated mangrove aquaculture systems” is one of the potential intervention options.</p> <p><b>Finance:</b> As part of the ecosystem thematic priority, there is a strategy to enact legislation to support community-based ecological management which helps to set the enabling conditions necessary to support relevant programs like PES. Establishing PES programs is another specified strategy that aims to create financial incentives to landowners and communities to implement practices that enhance ecosystem services.</p>
<p><b>NBSAP – CBD</b></p> <p>2015 – 2028</p> <p>CBD Decision 15/6 requests parties to</p>	<p><b>Coastal ecosystem biodiversity:</b> The NBSAP notes the Coral Triangle Initiative target of at least 20% of each major marine and coastal habitat type under strict protection and noted that the Philippines used an interim target of at least 10%. For mangroves, 10% is estimated to be at approximately 156,900 ha. Specifically, the related target is “By 2028, there will be no net loss in the presence and area distribution of live coral cover, mangroves, and seagrasses” This target is not on track to meet.</p>

submit national reports by Feb 28, 2026	<p><b>Climate Change:</b> The 2011 – 2028 NBSAP lists climate change numerous times, in the context of the impacts from climate change on biodiversity, not in the context of how biodiversity protection can enhance climate mitigation and adaptation actions.</p> <p><b>Ecotourism:</b> DENR AO 2013-19 defines ecotourism as a “form of sustainable tourism within a natural and cultural heritage area where community participation, protection, and management of natural resources, culture, and Indigenous knowledge and practices, environmental education and ethics as well as economic benefits are fostered and pursued for the enrichment of host communities and satisfaction of visitors” The majority of the 78 tourism development areas identified in the NBSAP are coastal or marine ecosystems. The 2028 target on human well-being commits to an “<i>annual increase of at least 5% in biodiversity conservation related jobs</i>” like ecotourism.</p> <p><b>Finance:</b> The NBSAP indicates three primary sources of biodiversity funding, all of which align with the finance section of this report for blue carbon efforts: public funds (government), official development assistance (ODA), which could include loans, and emerging or innovative financing schemes like Payment for Ecosystem Services (PES).</p> <p>A series of regional consultation workshops have been initiated by the DENR for the updating of the Philippine Biodiversity Strategic Action Plan, localizing the NBSAP. The current iteration of the PBSAP integrates and mainstreams new global biodiversity targets from KM-GBF. The consultations began with the Mindanao-Visayas Cluster last August of 2023. The fourth leg of the workshop was done in February of 2024 to cover the Northern Luzon Cluster, and national consultation is targeted by May.</p> <p>DENR-BMB manages the PBSAP updating process and leads the project technical working group with members from NEDA, DA-BFAR, CCC, DENR-FMB, DENR-CCS, and UNDP, among others.</p>
UN Ocean Voluntary Commitments of Ocean Action	<p>During the 2nd United Nations Ocean Conference held in Portugal in 2022, the Philippines joined the consensus calling for the scaling up of Ocean Action to implement the UN’s Sustainable Development Goals. In its national statement, the country highlighted the following initiatives for the country to contribute to the UN Ocean Agenda:</p> <ul style="list-style-type: none"> <li>• The inclusion of the prevention, reduction, and management of marine litter in its National Plan of Action (NPOA-ML)</li> <li>• The country’s use of an ecosystem-based approach in its fisheries management</li> <li>• The establishment of Fisheries Management Areas (FMA) and Vessel Monitoring Measures (VMM) to better monitor illegal, unreported, and unregulated fishing</li> <li>• Spearheading other projects that promote ocean health and sustainable use of ocean resources</li> </ul>
Ramsar National Reports	<p>The Philippines enacted the Ramsar Convention in November of 1994. At present, the country has seven Ramsar Sites, five of which cover blue carbon ecosystems. (See Table 4 for the list of sites)</p>
UNCLOS / BBNJ	<p>The Philippines has been a member of UNCLOS since 1982. In 2023, the country signed the UNCLOS Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ) which aims to establish the legal framework for the protection and sustainable use of marine resources beyond the country’s maritime jurisdictions. This agreement includes:</p> <ul style="list-style-type: none"> <li>• Establishment of protected areas in the high seas</li> <li>• Benefit-sharing from the use of marine genetic resources</li> <li>• Regulation of deep-sea mining and other activities that could harm the BBNJ</li> <li>• Capacity development and tech transfer of marine technology to developing countries</li> </ul> <p>While countries have signed on, 60 countries need to ratify to enter into force. As of April 8, 2024,, only three have been ratified (Belize, Chile, and Palau).</p>
WTO fisheries agreement	<p>In February 2024, the Philippines ratified the Agreement on Fisheries Subsidies (FSA). This agreement will provide least-developed countries subsidies to fishery activities up to and within the EEZ. The FSA will also prohibit subsidies that contribute to IUU fishing and overfishing, particularly in the high seas. While negotiations are complete, ratification is still needed to enter into force.</p>

**Table 10.** Brief description of Philippine national input to international reporting and commitments for climate change via the NDC, biodiversity via the NBSAP, ocean action via national reports to UNOC, and wetland conservation via national reports to Ramsar. Also included are ongoing efforts pre-ratification with high seas commitments via UNCLOS/BBNJ and fisheries via WTO.

The Sustainable Development Goals beyond SDG14/UN Ocean is not listed above, and the Philippines still has much to do to achieve its commitments. According to the Philippine Statistics Agency in its Pace of Progress Report, the country has not met most of its progress indicators for the year 2022 (Fig. 31) and has, in fact, regressed in terms of achieving 8 out of the 14 goals (including Goal 13: Climate Action). With a number of the above national reports and commitments up for revision in the coming years, like the NDC and NBSAP, this is an area to further enhance action across all global goals and further demonstrate synergies between climate change, biodiversity and sustainable development.



**Figure 31.** The Philippines 2022 SDG Pace of Progress from the Philippine Statistics Agency towards achieving its Sustainable Development Goal (SDG) commitments. Notably the areas in red are areas for improvement in the coming years, including climate action and food security.

## 5.2 National Policy and Regulations

The Philippines has a history that includes significant legislation and policies that aim to protect its aquatic and terrestrial resources. Yet, gaps remain, and additional needs have been identified. Thus, the Philippines continues to assess, update, and create new legislation where needed. Philippine policy spans across different branches and levels of government – local (e.g., LGU) or national (e.g. legislative, executive), and across agencies covering different focal areas (e.g. DENR, BFAR), as well as crosscutting themes associated with this report.

Below is a selection of national and sub-national policies that span priorities and topics that impact coastal and marine ecosystems and blue carbon actions. Given the wide range of policies that relate, we have included a selection here and a more comprehensive list in Appendix B.

Policy	Enacted	Description	Related theme
Climate Accountability Act (CLIMA)	2024 (tbd)	Currently a bill before the Philippines Congress. Seeks to hold corporate actors to account for their contributions to climate change. It proposes a “loss and damage-focused legal framework.” If passed, this would be a world first.	Climate change; Finance
Low Carbon Economy Act	2024 (tbd)	Intended to institutionalize a national carbon crediting system where mangrove and potentially seagrass ecosystems can contribute	Carbon credits; Finance;
Community-based Forest Management Strategy	2021 – 2026	Approval of Five-Year Work Plan (FYWP) of the Holders of Community-Based Forest Management Agreement (CBFMA) for the protection, rehabilitation and sustainable use of forest resources in the country.	Land Tenure; Mangroves
Roadmap to Institutionalize Natural Capital accounting in the Philippines	2022	It provides strategic guidance on national implementation of natural capital accounting from 2022 - 2040 and includes a development of a sustainable financing instrument.	Finance; Natural Capital
Integrated Coastal Management (ICM) Act	2023	Adopts ICM as a national strategy for the holistic and sustainable management of coastal and related ecosystems and the resources from ridge-to-reef, establishing the National Coastal Greenbelt action plan, other supporting mechanisms for implementation, and providing funds.	Mangroves; Seagrasses;
Philippine Ecosystem and Natural Capital Accounting System (PENCAS)	2023	Approved by the Lower House in August 2023. Aims to establish the Philippine Ecosystem and Natural Capital Accounting System (PENCAS) which will take into account the country’s natural capital and its impact to the economy.	Finance; Ecosystem valuation
Guidelines on Carbon accounting, verification and certification system (CAVCS) for forest carbon	2021	Established CAVCS to enhance forest carbon stocks and/or reduce emissions from forests in preparation for the development of carbon markets, with participation from the private sector, government entities, and NGOs. Activities that increase carbon stocks such as mangrove plantations are also considered eligible forest carbon projects.	Carbon market; Finance; MRV; Mangroves
National Mangrove Forest Protection and Preservation Act	2019	An act providing for the preservation, reforestation, afforestation, and sustainable development of mangrove forests in the Philippines.	Mangroves; Biodiversity
Comprehensive Land Use Plan	2013	Includes climate change adaptation and disaster risk reduction activities in land use planning to emphasise the connectivity of upland, lowland, and coastal ecosystems	Blue economy; Development; Mangroves

**Table 11.** Select national policies that demonstrate a wide-ranging relevance of blue carbon ecosystems and related projects that span policies and themes around conservation, finance, markets, technical accounting, fisheries , a blue economy and more. A comprehensive account of relevant policies can be found in Appendix B.

## 5.3 International Partnerships

The Philippines is a valued member of many prominent international partnerships and initiatives:

### Philippine National Blue Carbon Action Partnership

The Philippines formally joined the World Economic Forum (WEF's) Blue Carbon Action Partnership (BCAP) in 2023 during the Dubai UNFCCC COP28. Joining demonstrates the Philippines commitment to implementing its Blue Economy Agenda. The WEF's BCAP will operate at two scales: 1) establishing national BCAPs, and 2) at the global scale to facilitate sustainable and equitable growth of blue carbon and related financing needs.

The Philippine National BCAP was established in 2024 with the DENR-BMB spearheading the development of a National Blue Carbon Roadmap/Initiative to establish a strategic framework for the conservation, protection, rehabilitation, and enrichment of the Philippines' blue carbon ecosystems. This effort will kickstart a whole-of-society approach to developing a shared ambition for blue carbon, community resilience, and inclusive development. A core team has been established to support the development of the roadmap, including Conservation International, Rare, Forest Foundation Philippines, Wetlands International, among others. The Government of the United Kingdom supports this effort through the UK Blue Planet Fund.

On March 5-7, 2024, the DENR initiated an inaugural workshop with key stakeholders to initially develop the Blue Carbon Policy and the Blue Carbon Roadmap. The stakeholders agreed to pursue an Executive Order that will be submitted to the Philippine President by the end of 2024 to articulate the role of the different government agencies and non-state actors, the different principles primarily adopted from the high-quality Blue Carbon principles and guidance,<sup>111</sup> as well as the governance structure. As for the latter, a Task Force that the DENR-BMB will lead will be formed with the help of a Secretariat. Committees will also be formed on Policy, Science and Technology, and Finance.

The workshop highlighted roadblocks and actions that need to be prioritized for the next three years:

1. For Policy, to prioritize the signing of the Executive Order by the Philippine President as well as the development and eventual issuance of a blue carbon trading policy. Policy briefs for local government units and policy makers will also be produced to mainstream blue carbon;
2. For the Science and Technology, mapping of critical BC ecosystems and potential restorable areas to include ground truthing and identification of abandoned, undeveloped and underutilized fishponds; and
3. For the Financing Mechanism, stock taking of best available financial options, blue carbon capital accounting and development of incentive mechanisms for BC-related projects.

### High Level Ambition Group (HILAG) on Blue Carbon

The HILAG aims to enhance commitments to better integrate blue carbon efforts in the ocean-climate-biodiversity nexus at the highest political level and will serve as a complement to existing partnerships like the **International Partnership for Blue Carbon (IPBC)**. It provides a platform for national governments to engage, communicate and increase ambition to conserve, sustainably use and restore coastal blue carbon ecosystems globally. *(Note: the Philippines is not a current member of the IPBC or*

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<sup>111</sup> High Quality Blue Carbon Principles & Guidance [English Version](#) and [Tagalog Version](#). 2022



HILAG)

### **The High Ambition Coalition (HAC) for Nature and People**

The High Ambition Coalition for Nature and People is an intergovernmental group composed of 118 countries originally created to help realize the global agreement of protecting at least 30% of the world's terrestrial and aquatic ecosystems by 2030 (also known as the 30X30 Initiative). The Philippines joined the coalition in 2022 during COP15 and is the first ASEAN Nation to do so. In 2023, DENR conducted its very first stakeholder consultation workshop to map out measures that need to be taken for the country to meet its commitment to the HAC.<sup>112</sup> The workshop was attended by key players in the country's biodiversity and conservation sector, such as Wildlife Conservation Society, GEF, UNDP, Embassy of the United Kingdom, Forest Foundation of the Philippines, USAID, Oceans 5-MSN 30X30 Consortium, Parabukas, Save Philippine Seas, and the Center for Sustainability PH.

### **The Global Ocean Alliance (GOA)**

The Global Ocean Alliance was formed as a complimentary alliance to the HAC and focuses primarily on the realization of the 30X30 Initiative for the oceans and some targets in the Kunming-Montreal Global Biodiversity Framework. The Philippines is part of the 77 country members of the GOA.

### **The Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF)**

The Coral Triangle Initiative is an intergovernmental group of six countries working together to preserve and sustainable develop the marine resources within the Coral Triangle. In 2009, the Philippine CTI-CFF National Coordinating Committee was formed to take the lead in the implementation of the Philippine CTI-CFF National Plan of Action (NPOA). The NPOA is a 10-year action plan of the priorities and commitments of each member government and is aligned to the bigger CTI-CFF Regional Action Plan. It aims to help build resilient ecosystems and coastal communities, ensure food security and sustainable livelihoods through conservation and the sustainable management of the coastal and marine resources in the region. The latest Philippine CTI-CFF National Plan of Action was published in 2009<sup>113</sup>, but no updated versions have been released since then. However, a more updated action plan for the region, the CTI-CFF Regional Action Plan 2.0, was released in 2022 to cover the years 2021-2030.<sup>114</sup>

### **The Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)**

PEMSEA has been working in the Philippines since 1993, focusing on integrated coastal management, habitat protection, and blue economy. In 2023, they expanded their blue carbon work and started participating in blue carbon meetings to become better informed, such as the IPBC Annual Dialogue in the UNESCO Headquarters in Paris.

### **NDC Partnership**

As a member of the NDC Partnership, the Philippines has requested support related to the preparation of NDC-related projects and pipelines for investment; private sector engagement to implement NDCs and is currently implementing its NDC Partnership Plan that ranges sectors like AFOLU, Energy, Transport, and other technical capacity needs. For example, the Partnership Plan includes an outcome related to access to climate finance and investment, which facilitated a study to be conducted in 2021

<sup>112</sup> DENR. September 2023. [Philippines pushes blue economy agenda as it joins the Blue Carbon Action Partnership.](#)

<sup>113</sup> CTI. 2009. [Philippine CTI-CFF National Plan of Action.](#)

<sup>114</sup> CTI-CFF. 2022. [Regional Plan of Action \(RPOA\) 2.0](#)

on establishing a sustainable financing mechanism for forest conservation including mangrove forests. Conservation International implemented this with DENR-FMB as the primary government agency.<sup>115</sup>

### **BIOFIN Finance Initiative**

BIOFIN was established by UNDP and the European Commission in response to the global need for increased access to finance across public and private sources towards meeting global and national biodiversity goals. A goal of BIOFIN is to support the development of Biodiversity Finance Plans and related financial needs assessments for member countries. The Philippines already has secured \$40 million for protected areas through BIOFIN<sup>116</sup> since it became a member in 2014. The responsible agency is DENR-BMB and DoF.

#### **CASE STUDY:**

#### **Crosscutting Thematic Relevance of Tañon Strait Protected Seascape (TSPS)**

Tañon Strait Protected Seascape (TSPS), between Negros and Cebu islands, is a marine protected area in the Philippines with high biodiversity and diverse marine species, despite challenges like illegal fishing & environmental destruction from natural disasters. As one of the largest MPAs in the Philippines, TSPS takes a seascape approach. This means management is in the hands of various stakeholders, leading to unclear coordination processes and responsibilities resulting in ineffective conservation efforts. It is under the jurisdiction of the national government's PAMB, covering two regions, three provinces, 42 coastal cities and municipalities, and 298 villages. Coordination among the numerous stakeholders and a lack of capacity on the local level prevent the TSPS NIPAS from effectively protecting it (UNDP, 2021). In a case study co-led by GIZ in 2011, the TSPS scored the lowest in management effectiveness compared across several protected areas in the Philippines. Since then, Rare, UNDP and others implemented the "SmartSeas" project with 17 municipalities in TSPS. Continuity and political leadership changes in the LGUs remain a challenge, especially if implemented during elections or political transition periods.

In 2024, Rare with the support of the Blue Carbon Accelerator Fund<sup>117</sup>, will be conducting a pre-feasibility assessment for carbon market potential in TSPS through June 2025. After Typhoon Rai (Odette) devastated the area in late 2021, the mangrove ecosystems still have yet to fully recover. The project will explore how to explore restoration potential through community engagement and early-stage blue carbon project design.

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<sup>115</sup> Information Available on [NDC Partnership Portal](#).

<sup>116</sup> UNDP. 2021. [The Biodiversity Finance Initiative \(BIOFIN\): Finance for Nature](https://www.biofin.org/philippines); <https://www.biofin.org/philippines>

<sup>117</sup> Blue Carbon Accelerator Fund. 2024. [Four innovative and community-centered blue carbon projects selected for second round of Readiness initiative](#).

## Section 6: Gaps and Opportunities

The above sections have provided an overview of the general state of play for the coastal and marine ecosystems in the Philippines, together with key policies, knowledge tools and resources relevant for the governance of blue carbon ecosystems. Collectively, these have revealed overarching gaps and opportunities to advance the conservation, restoration and sustainable management of coastal and marine ecosystems in the Philippines.

The critical importance of coastal ecosystems for actions to support climate mitigation, adaptation and resilience is becoming more well recognized and valued. There is still much to be done regarding knowledge generation, conservation, and management of the Philippines' blue carbon ecosystems, including recognizing its contribution to global goals like biodiversity loss, climate change and sustainable development with a local impact. At this stage, the Philippines' greatest challenge to coastal Nature-based Solutions is improving the country's scientific and technical knowledge on blue carbon ecosystems, linking the science to policy together with the social and economic aspects, and improving institutional coordination across departments. Building on the above chapters, this section identifies barriers in the scientific, governance, and financial landscape, together with opportunities that can be done to further the country's blue carbon ecosystem agenda.

### 6.1 Scientific and Technical Capacity

**Mangrove and seagrass mapping is dependent on imperfect remote sensing methodologies, and ground truthing is a logistical challenge in large archipelagic countries like the Philippines.** Resource assessments of mangrove and seagrass ecosystems have been conducted in the Philippines since the 1970's. However, many of these initiatives have been conducted at small, local, and uncoordinated scales that are generally insufficient to support national policies for effective conservation actions. Global remote sensing databases — such as the Global Mangrove Watch — provide nationally relevant data, but do not conduct national ground-truthing and can result in inaccuracies at a local scale. In the Philippines, NAMRIA land cover data is available at a national level but is scientifically imperfect and has been found to over-generalize areas as mangrove forests. These tools can provide valuable generalized baselines for national conservation policies, but recognizing the imperfection of this data is important for coastal conservation efforts — ground truthing land use extent and trends is critical during blue carbon mapping and feasibility exercises.

**Seagrass data at the national and local level is sparse.** The latest available information for the country's total seagrass cover dates back to 2015 (published by NAMRIA in 2017) and was primarily obtained through remote sensing. Given that the health of seagrass meadows has largely been ignored in regulations unless part of a Protected Area, there is not as much data available on seagrass extent and threats as there are for other ecosystems. This recognition of the importance of seagrass ecosystems for multiple ecosystem services is shifting globally, including in the Philippines. Blue carbon studies are also sporadically distributed across the country. For example, blue carbon stock studies have only been conducted in 20 out of 82 provinces with a particular focus on Palawan, Eastern Samar, and Western Visayas.<sup>95</sup>

**The Philippines must expand scientific research and methodologies on coastal ecosystem service valuation.** While the Philippine Ecosystem and Natural Capital Accounting System (PENCAS) is awaiting approval in the Senate, research related to ecosystem service valuation of blue carbon ecosystems would benefit from enhanced research and understanding. Assuming PENCAS will be approved in 2024, we anticipate it will support the eventual establishment of a more regular validation and ground-truthing of data sourced from remote sensing in mangrove and seagrass areas nationwide. Additionally capacity building is necessary to support common methodologies for ecosystem services valuation. Ecosystem valuation contributes the background and baseline information necessary for nature-based carbon market or non-market projects as well, as common pricing or valuation will further support the protection and restoration of ecosystems.

**While MRV and carbon accounting remains a technical challenge for blue carbon project development given the complexity, many experiences from Reducing Emissions from Deforestation and Forest Degradation (REDD+) in terrestrial forests can be applied towards mangroves.** According to the National REDD+ Strategy, REDD+ activities have been underway in the Philippines since 2009 and can serve as an example for blue carbon. The connection between REDD+ and blue carbon is mangrove forests, as mangrove areas are categorised as forest land per the National Forest Definition. In some REDD+ projects, mangrove forests have already been included in these projects. The technical experience and capacity that the Philippines government and the project managers developed when implementing REDD+ offers a unique opportunity to use that knowledge and apply it. For example, how to develop a technically-sound baseline and understanding the drivers of deforestation is critical for any blue carbon or REDD+ project. Additionally, under the Philippine National REDD+ Strategy, a “triple bottomline” approach was adopted, where carbon, community and biodiversity are seen as equally valued in implementation and development. This is an approach that blue carbon can also apply and adapt to ensure an equitable approach for all stakeholders.

## 6.2 Policy and Governance

**Unclear governance structures, with overlapping department mandates and complex coordination processes, present challenges in effective coastal ecosystem management.** Complex governance arrangements in coastal zones are an oft-cited barrier to blue carbon project development, including competing government mandates and interests, together with opaque legal rights of ownership and land rights in coastal zones. Competing national and local regulations (e.g. coastal infrastructure planning and zoning, water and waste regulation, energy, agricultural policies, environment) impact both blue carbon project development and the continued degradation and loss of coastal systems. Uncoordinated regulations can compromise the viability of blue carbon investments, for example infrastructure development may impede hydrological flows which degrade mangroves, or agricultural/aquaculture subsidies may unintentionally lead to deforestation with the creation of fish or shrimp ponds. Developing blue carbon projects is not just a question of technical expertise, but in navigating context-specific national and local level regulatory systems and addressing drivers of loss at the root cause (e.g. deforestation for infrastructure, aquaculture). Harmonizing local policies and creating comprehensive regulation for the protection of coastal ecosystems — such as clarifying domestic regulatory regimes and ensuring interagency coordination — can help support project development and permanence.<sup>118</sup>

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<sup>118</sup> <https://bluenaturalcapital.org/wp2018/wp-content/uploads/2022/06/BNCFF-Coastal-NbS-Investments.pdf>

To date, the Philippines government has not established a regular monitoring program for blue carbon ecosystems. The Philippine Blue Carbon Action Partnership is starting to coordinate across partners to draft a blue carbon roadmap that will serve as a critical resource to support institutional coordination and data assessments, monitoring, and reporting.

**Contested land and carbon rights of coastal IPLCs creates tension around coastal resource management and blue carbon project development and implementation.** The land tenure of coastal IPLCs, particularly small-scale fisheries communities, is a key source of conflict in coastal zone management and development worldwide. In the Philippines, IPLCs, including small-scale fishing communities — despite having been in locations for generations — may lack formal ownership rights and thus legally live on public land.<sup>119120</sup> Under the Philippine Fisheries Code of 1998, fishing communities are entitled to be relocated to land ‘near [their] fishing grounds’ and are entitled to ownership of lands to which they are resettled.<sup>121</sup> Without ownership rights, poor and vulnerable residents may be threatened with relocation and displacement by coastal development initiatives, as well as left out of the benefit sharing of coastal initiatives.

The FAO small-scale fisheries guidelines<sup>122</sup> provide aspirational voluntary guidelines that governments can aspire to include references to land. For example, in Section 5.3: *“States, in accordance with their legislation, should ensure that small-scale fishers, fish workers and their communities have secure, equitable, and socially and culturally appropriate tenure rights to fishery resources (marine and inland), small-scale fishing areas, and adjacent land...”*

Land tenure and unclear ownership of coastal resources is a prominent bottleneck to blue carbon and coastal conservation project development. This includes questions of delineating public/private land ownership in tidal zones, recognizing and respecting customary rights of IPs over ancestral domains and waters, as well as navigating informal management systems of IPLCs, particularly under additional pressures of sea level rise. It also brings into question who has the right to carbon credits for a given project (e.g. landholder, local communities, government, project developers). Research has indicated that blue carbon projects that recognize and build upon traditional local management systems tend to be more successful — as such, projects must respect land tenure and resource (including carbon) rights of IPLCS, adhere to robust social safeguards, and incorporate and empower local communities throughout planning, development and implementation, and benefit-sharing.<sup>123</sup>

**Limited regulatory enforcement capacity results in “paper parks” without effective protection.** The Philippines has an extensive list of enacted legislation to protect its coastal and marine resources, yet also lacks proper implementation and enforcement of environmental laws and property rights. According to a 2019 UNEP study, the main challenges preventing the practical implementation of environmental laws in the Philippines are the lack of proper implementing regulations, funding, and political will. The Environmental Democracy Index categorizes the Philippines as “Fair or Limited” in terms of enacting national-level laws, regulations, and practices.

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<sup>119</sup> <https://www.researchgate.net/publication/335310099> The role of land tenure in livelihood transitions from fishing to tourism

<sup>120</sup> [https://pdf.usaid.gov/pdf\\_docs/pnacu794.pdf](https://pdf.usaid.gov/pdf_docs/pnacu794.pdf)

<sup>121</sup> <https://policy-practice.oxfam.org/resources/beyond-safe-land-why-security-of-land-tenure-is-crucial-for-the-philippines-pos-324557/>

<sup>122</sup> <https://www.fao.org/3/i4356en/i4356EN.pdf>

<sup>123</sup> [High Quality Blue Carbon Principles and Guidance](#). 2022 (Available in English and Tagalog)



LMMPAs have improved effectiveness in recent years. While additional effort needs to be focused on ensuring effective and equitable management, 65% of MPA were categorized as “Good” (scores ranging from 51-74%) and the remaining 35% categorized as “Excellent” (scores ranging from 75-100%) based on a 2022 MPA Effectiveness Assessment by DENR. These statistics were vastly improved from when “paper parks” were considered prevalent among the LMMPAs.

Institutional coordination is challenging with multiple agencies involved in resource management, resulting in contradictory or absent enforcement. This is further exacerbated by the lack of manpower and resources, together with bureaucratic corruption in all levels of government. Many bureaus and government units with mandates related to biodiversity conservation are largely underfunded and thus, cannot fully implement the frameworks and action plans as mandated by their offices.

**Failure to involve local communities in conservation initiatives reduces effectiveness and transparency.** Many of the unsuccessful conservation initiatives in the country were caused by the failure to involve local communities in the planning and implementation process of the project. One such example is the National Greening Program (NGP), which was tagged as a failure by the Commission on Audit (COA) during the period of 2011-2019. The Performance Audit Report submitted by the COA in 2019 stated the agency’s failure to prepare and include the main stakeholders in its project implementation led to the project’s failure to rehabilitate degraded ecosystems and improve the country’s overall forest cover. DENR’s fast-tracking of the NGP resulted in a very low 13.92% accomplishment performance even at the basis of an 85% survival rate.<sup>124</sup>

## 6.3 Finance

**Mobilizing multiple sources of capital for coastal conservation is critical to overcome a lack of funding for implementation.** The Philippine government reported a 14 billion PhP annual funding gap for biodiversity conservation and restoration<sup>125</sup> at the UN Convention on Biological Diversity COP15. Coastal conservation initiatives utilize a variety of financing approaches for implementation, including market-based (e.g. carbon trading) or non-market based (such as tourism, philanthropic or public investment focused on biodiversity, fisheries, climate resilience, or development). While blue carbon markets receive huge international attention, not all coastal ecosystems are going to be “commercially viable” on the carbon market, and thus market-based approaches alone will not be sufficient on its own to address the funding gap. A suite of complementary financing mechanisms, including those that capture the resilience, fisheries, and community values of these ecosystems, can be bundled to attract additional investment towards the protection and restoration of blue carbon ecosystems.

**Improving supply —and quality— of blue carbon credits in the Philippines is an opportunity to protect ecosystems and improve local livelihoods via high-quality projects, if done responsibly.** Commercial demand for blue carbon credits is rapidly increasing, with some estimates that corporate demand could exceed \$10 billion or more<sup>126</sup>, yet global supply of blue carbon credits is small. Closing this gap in supply and demand, while ensuring blue carbon credits are high-quality, is a critical pathway

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<sup>124</sup> The Commission on Audit. 2019. [Performance Audit Report on the National Greening Program](#).

<sup>125</sup> DENR. 2022. [Philippine Country Statement - 5th Meeting of the Conference of Parties Convention on Biodiversity](#).

<sup>126</sup> Friess, DA. et al. 2022. Capitalizing on the global financial interest in blue carbon.

to channel private investment into the conservation and restoration of blue natural capital for climate mitigation and coastal resilience, fisheries, and local livelihoods. The Philippines is known to have one of the highest Total Ecosystem Carbon Stocks (TECS) in the Southeast Asian region. Hence, the ecosystem valuation, protection, and carbon credit discussions go hand-in-hand. While there is an opportunity to generate financial revenue from blue carbon credits<sup>127</sup>, there are also non-market/credit approaches that support the protection and sustainable management of blue carbon ecosystems. For both market or non-market projects, it is critical projects are designed in collaboration with the local communities and with high environmental and social integrity for a high-quality project. As indicated in Section 5.8, the High-Quality Blue Carbon Principles serves as a guidepost for developers to ensure the project is equitably designed. However, the demand for blue carbon credits currently far exceeds the available supply, and some countries are utilizing the emission reductions from projects for their national mitigation targets in the Paris Agreement/NDC.

Another barrier is the small-scale nature of coastal projects, which may not be at the scale some investors are interested. A potential option for these small-scale projects is to consider a networked approach using common baselines allowing coastal projects to generate a greater supply.

**Sustainable ecotourism continues to grow and provide opportunity to generate additional revenue towards coastal ecosystems protection.** Blue carbon ecosystems show great potential for the ecotourism industry, with recreation activities including hiking, boating, wildlife watching, fishing, snorkelling, and diving. Income from these activities can come, for example, from access and user fees and be redirected towards protection initiatives. The Philippines has several well-established and properly managed ecotourism spots that could be replicated in other areas of the country. One example is the Bojo River Cruise in Aloguinsan, Cebu, and Central Visayas, which was awarded one of the Top 100 Sustainable Destinations in the world for three consecutive years (2016 to 2018). The association was also recognized as the best Community-Based Tourism by the ASEAN Tourism Awards in 2017. In 2023, tourists to the Philippines grew and surpassed over 5 million international visitors, contributing to PhP 482.54 billion into the economy. Much of the tourist destinations now revolve around ecotourism, sustainable tourism, or “regenerative tourism,”<sup>128</sup> all of which rely heavily on healthy and intact coastal ecosystems for wildlife watching, fishing or others.

**International carbon market negotiations at the UNFCCC impact carbon credit pricing, national policies, blue carbon project development, and buyer interest.** Global governance decisions affect carbon credit market stability, including general policy support for the voluntary carbon market. There is still tension between private credits under the voluntary market and credits for meeting national demand under the UNFCCC. Article 6 of the Paris Agreement established the mechanism for cooperation among Parties in achieving their national commitments, including through carbon trading. While Article 6 does not regulate the voluntary carbon market, the existence of the two markets in parallel has raised questions of double counting, e.g. whether a credit could be counted towards a country’s NDC while also claimed as a voluntary offset, or if corresponding adjustments at the national level would need to be made for credits in the voluntary market. In the meantime, this

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<sup>127</sup> Carbon credit projects require additionality, to demonstrate that the resulting emission reductions/avoided would not have happened without the project intervention. Standards might refer to such projects as “avoided loss” = conservation activities, or “avoided/reduced emissions” = restoration activities.

<sup>128</sup> DENR 2023 [DENR Calls for shift to “regenerative” tourism to further boost ecotourism sector.](#)

continued uncertainty on corresponding adjustments has led to some countries restricting the voluntary carbon market, whether in pausing project development or suspending the issuance of VCM credits. Further guidance is expected at the UN Climate Change Conference in November 2024 which could stimulate more enabling national policy environments for blue carbon project development.

**Innovative financial mechanisms are necessary to build community and climate resilience while protecting nature and people.** While the international interest in carbon markets grows, the Philippines explores other financial approaches to achieve similar global climate, biodiversity, and sustainable development goals. These pilot projects, like the weather-index parametric insurance project described earlier, should be considered for scaling or replication opportunities. Additionally, other non-market-based approaches can be structured as a blue carbon project even if they don't generate carbon credits and could take the form of a blue bond or payment for ecosystem service (PES) scheme. The variety of green, blue, or sustainable bonds are also being piloted, but have found that it is difficult for LGUs to tap into the municipal bond market.<sup>129</sup> Additionally, it has been found that in general parametric insurance in the Philippines tends to be either large public policyholders like the national government or smaller individual policyholders like fishers or farmers, creating a decrease in attractiveness given the lack of diversity. This is one example of how the innovative weather-index parametric insurance for small-scale fishers is expanding beyond these norms and barriers.<sup>130</sup>

## Section 7: Closing Remarks

Global momentum around the importance of blue carbon actions and coastal ecosystems for climate action, sustainable development, biodiversity, and community livelihoods continues to grow internationally, nationally, and locally. The Philippines has a rich diversity of blue carbon ecosystems, mangroves, seagrasses, and salt marshes, and is increasing its political and financial investment and collaboration. The protection, restoration and sustainable management of blue carbon ecosystems has a growing interest in developing blue carbon market projects or other non-market projects (i.e. conservation or payment for ecosystem services), all which have the potential to generate revenue to support local livelihoods and sustainable financing for implementation.

For blue carbon market projects in the Philippines, existing policies can serve as a foundation for the enabling conditions for project design, but more carbon rights or carbon credit policies or regulations are necessary to ensure a common and transparent approach to carbon trading.

The gaps in the above section identified opportunities for further investment specifically around scientific and technical capacity development, and policy and governance. It also highlighted critical needs and opportunities to mobilize diverse sources of capital for the protection, conservation, and restoration of coastal ecosystems. Emerging partnerships like the WEF's Blue Carbon Action Partnership and existing partnerships like the IPBC and HILAG can serve a vital role in supporting and developing blue carbon political will and national actions in the Philippines and globally.

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<sup>129</sup> [Asian](#) Institute of Management. 2021. [Financing and valuating Ecosystem-Based Adaptations in the Philippines.](#)

<sup>130</sup> [Asian](#) Institute of Management. 2021. [Financing and valuating Ecosystem-Based Adaptations in the Philippines.](#)

## Acronym List

AFD	Agence Française de Développement
AFMA	Agriculture and Fisheries Modernization Act
AHP	ASEAN Heritage Parks
AUU	Abandoned, Underdeveloped and Underutilized
BBNJ	Biodiversity Beyond National Jurisdiction
BCE	Blue carbon ecosystem
BFAR	Department of Agriculture-Bureau of Fisheries and Aquatic Resources
BIOFIN	Biodiversity Finance Initiative
BMB	Biodiversity Management Bureau
BoatR	Boat Registration
BR	Biosphere reserve
BSP	Bangko Sentral ng Pilipinas (Philippines Central Bank)
BTr	Bureau of the Treasury
CAVCS	Carbon accounting, verification and certification system
CBA	Cost-Benefit Analysis
CBD	Convention on Biological Diversity
CCC	Climate Change Commission
CCVA	Climate Change Vulnerability Assessment
CENRO	City Environment & Natural Resources Office
CHASSAM	Coastal Hazards and Storm Surge Assessment and Mitigation
CLIMA	Climate Accountability Act
CLUP	Comprehensive Land Use Plan
CMEMP	Coastal and Marine Ecosystems Management Program
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CNFIDP	Comprehensive National Fisheries Industry Development Plan
COP	Conference of the Parties
CPHMAIP	Comprehensive Post Harvest, Marketing and Ancillary Industry Development Plan
CPI	Climate Policy Initiative
CRA	Climate Resilient Agriculture
CSR	Corporate Social Responsibilities
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security
DA	Department of Agriculture
DAO	DENR Administrative Order

DAR	Department of Agrarian Reform
DBM	Department of Budget and Management
DBP	Development Bank of the Philippines
DENR	Department of Environment and Natural Resources
DILG	Department of Interior and Local Government
DOF	Department of Finance
DOST	Department of Science and Technology
DOST-PCAARRD	Department of Science and Technology - Philippine Council for Agriculture, Aquatic and Natural Resources, Research and Development
DOT	Department of Tourism
DPSIR	Driver-Pressure-State-Impact-Response
DTI	Department of Trade and Industry
EbA	Ecosystem-based Adaptation
EBSA	Ecologically and Biologically Significant Area
EEZ	Exclusive Economic Zone
EMB	Environmental Management Bureau
E-NGP	Expanded National Greening Program
E-NIPAS	Expanded National Integrated Protected Areas Systems
ENRO	Environment and Natural Resource Officers
ENSO	El Niño-Southern Oscillation
ERDB	Ecosystems Research and Development Bureau
ESG	Environmental, social, and governance
FAO	Food and Agriculture Organization
FCDO	UK Foreign, Commonwealth and Development Office
FishR	Fisherfolk Registration
FLA	Fishpond Lease Agreements
FMA	Fisheries management areas
FMB	Forest Management Bureau
FYWP	Five-Year Work Plan
GBF	Kunming-Montreal Global Biodiversity Framework
GDP	Gross domestic product
GEF	Global Environment Facility
GHG	Greenhouse gas

GIZ	German Agency for International Cooperation
GMA	Global Mangrove Alliance
GMW	Global Mangrove Watch
GOA	Global Ocean Alliance
GVA	Gross value added
HAC	High Ambition Coalition
HCR	harvest control rules
ICM	Integrated Coastal Management
IPBC	International Partnership for Blue Carbon
IPCC	Intergovernmental Panel on Climate Change
IPLC	Indigenous peoples and local communities
IPRA	Indigenous Peoples Rights Act
IPs	Indigenous peoples
IRR	Implementing Rules and Regulations
IUCN	International Union for Conservation of Nature
IUU	illegal, unreported, and unregulated
JICA	Japan International Cooperation Agency
KBA	Key Biodiversity Areas
LGU	Local Government Unit
LiDAR	Light Detection and Ranging
LMB	Land Management Bureau
LMMPA	Locally-managed marine protected area
LUCF	Land Use Change and Forestry
M/N/C/I FARMC	Municipal/National/City/Integrated Fisheries and Aquatic Resources Management Council
MC	Memorandum Circular
MERF	Marine Environment and Resources Foundation
MPA	Marine protected area
MPAN	Marine Protected Area Network
MRV	Monitoring, reporting & verification
MSME	Micro, Small, and Medium Enterprises
MSN	MPA Support Network
MVI	Mangrove Vegetation Index
NAMRIA	National Mapping and Resource Information Authority
NBSAP	Philippine Biodiversity and Strategy Action Plan
NC	National Communication
NCA	Natural Capital Accounting

NCCAP	National Climate Change Action Plan
NCI-SRD	National Convergence Initiative for Sustainable Rural Development
NDC	Nationally Determined Contribution
NDP	National development plan
NEDA	National Economic and Development Authority
NFRDI	National Fisheries Resource and Development Institute
NGOs	Non-governmental Organizations
NGP	National Greening Program
NIPAS	National Integrated Protected Areas Systems
NPOA	National Plan of Action
NSCB	National Statistical Coordination Board
NTP	National Transport Policy
OECM	Other Effective Area-based Conservation Measure
P.D.	Presidential Decree
PA	Protected Area
PAMB	Protected Area Management Board
PBSAP	Philippine Biodiversity Strategy and Action Plan
PCSD	Palawan Council for Sustainable Development
PDP	Philippine Development Pla
PEENRA	Philippine Economic-Environmental and Natural Resources Accounting
PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
PENCAS	Philippine Ecosystem and Natural Capital Accounting
PENRO	Provincial Environment & Natural Resources Office
PES	Payment for Ecosystem Services
PFDA	Philippine Fisheries Development Authority
PhilSA	Philippine Space Agency
Phil-WAVES	Philippine Wealth Accounting and the Valuation of Ecosystem Services
PHP	Philippine peso
PNSC	Philippine National Security Council
POESA	Philippine Ocean Economy Satellite Account
PPA	Philippine Ports Authority
PPPC	Public-Private Partnership Center
PSA	Philippine Statistics Authority
PSF	People's Survival Fund
RA	Republic Act



REDD+	Reducing Emissions from Deforestation and Forest Degradation
SAFDZ	Strategic Aquaculture and Fisheries and Development Zones
SDGs	Sustainable Development Goals
SEAFDEC	Southeast Asian Fisheries Development Center
SEC	Securities and Exchange Commission
SIFMA	Socialized Industrial Forest Management Agreement
SIPLAS	Siargao Island Protected Landscape and Seascape
SMEs	Small and medium-sized enterprises
SSF	Small-scale fishers
TECS	Total Ecosystem Carbon Stocks
TSPS	Tañon Strait Protected Seascape
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

UNEP-WCMC	United Nations Environment Programme World Conservation Monitoring Centre
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UPLB-INREM	University of the Philippines Los Baños- Integrated Natural Resources and Environment Management
UP-MSI	University of the Philippines Marine Science Institute
USAID	United States Agency for International Development
VCM	voluntary carbon market
VMM	Vessel Monitoring Measures
WCS	Wildlife Conservation Society
WEF-BCAP	World Economic Forum's Blue Carbon Action Partnership
WH	World Heritage
WTO	World Trade Organization
WWF	World Wide Fund for Nature

## Supplement: National Policy Table

The Supplement: National Policy Table below represents a living document, and more comprehensive overview of the policy and regulatory landscape in the Philippines. The policies listed below, while extensive, are not fully exhaustive of all relevant policies that impact and engage coastal ecosystems or coastal communities. In the report, we provided a selection of policies to represent the range of themes and statuses of the relevant policy landscape for blue carbon action. Below we provide the table that collected the information throughout the research for this report.

Policy Name	Date of approval	Link/Shorthand	Description	Category and Status	Theme
Climate Accountability Act (CLIMA)	2024 (tbd)	tbd	The bill is currently before the Philippines Congress and seeks to hold corporate actors to account for their contributions to climate change. It proposes a “loss and damage-focused legal framework”. If passed, this would be a world first.	In discussion	Climate Change
Low Carbon Economy Act	2024 (tbd)	tbd	At present, the Philippines does not have legislation to institutionalize the country’s carbon crediting system. The current DENR Secretary, Sec. Ma. Antonia Yulo-Loyzaga, herself, made the call for this legislation to be pushed in the country during COP 27 in 2022. In March 2023, a senate bill entitled the “Low Carbon Economy Act of 2023”, or House Bill 1992 was filed by Senator Loren Legarda. This proposed legislation is expected to help bring much needed attention to the restoration and preservation and the country’s blue carbon ecosystems and its crucial role in climate change mitigation.	In discussion	Climate Change; Mangrove Restoration; Carbon Markets
Philippine Development Plan	2023 - 2028	<a href="#">Executive Order No. 14 series of 2023</a>	This order formed the Philippine Development Plan which serves as a guide for the government in development planning for six years. EO No. 14, series of 2023 adopts the PDP for the years 2023-2028.	Executive policies	Development; Infrastructure
Community-based forest Management Strategy	2021-2026	<a href="#">DENR Administrative Order No. 2021-17</a>	Approval of Five-Year Work Plan (FYWP) of the Holders of Community-Based Forest Management Agreement (CBFMA) for the protection, rehabilitation and sustainable use of forests resources in the country.	Executive policies	Land Tenure
Expanded National Greening Program	2015 - 2028	<a href="#">Executive Order No. 193, series of 2015</a>	This order expanded the coverage of the National Greening Program to cover all other remaining unproductive and denuded forests and extended the period of implementation until 2028.	Executive policies	Mangroves
Comprehensive Land Use Plan	2013 - 2014		The country’s CLUP was updated in 2013-2014 in compliance with the Climate Change Act of 2009 (RA 9729) and the Disaster Risk Reduction and Management Act of 2010 (RA 10121) and now includes climate change adaptation and disaster risk reduction activities. The resource management framework under the new plan also shifted to a more ridge-to-reef approach to emphasize the connectivity of upland, lowland, and coastal ecosystems.		Land Use; DRR

Integrated Coastal Management Act	2023	<a href="#">Integrated Coastal Management Act</a>	Adopts Integrated Coastal Management (ICM) as a national strategy for the holistic and sustainable management of coastal and related ecosystems and the resources from ridge-to-reef, establishing the National Coastal Greenbelt action plan, other supporting mechanisms for implementation, and providing funds.	Legislative proposals (Lower/Congress House Bill). In progress.	Coastal management
Philippine National REDD-Plus Strategy (PNRPS)			This strategy aims to articulate a common vision on REDD+ in the Philippines and to guide the Climate Change Commission as it further develops the National Framework Strategy and Program on Climate Change; It also Informs international donors that are currently funding country readiness activities and research about the intended direction of REDD+ development in the Philippines; Mangroves are considered forests and included in the REDD+ MRV.		Forests; Mangrove
Philippine Ecosystem and Natural Capital Accounting System (PENCAS)	2023	House Bill No. 8443 (2023)	This house bill was approved by the Lower House in August 2023 and aims to establish the Philippine Ecosystem and Natural Capital Accounting System (PENCAS) which will take into account the country's natural capital and its impact to the economy.	Legislative proposals In progress.	Ecosystem valuation; Carbon Accounting
Roadmap to Institutionalize Natural Capital accounting in the Philippines	2022		It provides strategic guidance on national implementation of natural capital accounting from 2022 - 2040 and includes the development of a sustainable financing instrument.		Ecosystem valuation; Carbon Accounting
Carbon crediting system establishment	2024	tbd	In the Philippine context of carbon crediting systems in 2022, Secretary Maria Antonia Yulo-Loyzaga of the Department of Environment and Natural Resources (DENR) advocated for the initiation of legislation aimed at formalizing the Philippines' carbon crediting system in alignment with the nation's climate transition objectives, this would include forest restoration and other relevant nature-based solutions	In discussion	Carbon markets
Guidelines on the Establishment of the Carbon accounting, verification and certification system for forest carbon projects	2021	<a href="#">DENR Executive Order (DAO) No 2021-43</a>	This DAO is "issued to establish CAVCS in order to enhance forest carbon stocks and/or reduce emissions from forests in preparation for the development of carbon markets, with greater participation from the private sector, government entities, and upland organizations." Activities that increase carbon stocks such as mangrove plantations are considered eligible forest carbon projects.		Carbon markets; Mangroves; MRV
The National Coastal Greenbelt Bill Act	2020	<a href="#">The National Coastal Greenbelt Bill Act</a>	An act establishing the coastal greenbelt program to protect and enhance mangrove as well as beach forests in the coastal areas of the country.	Legislative proposals. In progress.	Conservation
National Mangrove Forest Protection and Preservation Act	2019	<a href="#">National Mangrove Forest Protection and Preservation Act of 2019</a>	An act providing for the preservation, reforestation, afforestation, and sustainable development of mangrove forests in the Philippines.	Legislative proposals (Senate House Bill). In progress.	Mangroves
Establishment of Fisheries Management Areas (FMA)	2019	FAO 263 <a href="#">of 2019</a>	Establishment of Fisheries Management Areas (FMA) for the Conservation and Management of Fisheries in Philippines Waters.		Fisheries

Expanded-NIPAS	2018	<a href="#">RA 11038: Expanded NIPAS Act of 2018</a>	The act expands the total number of protected areas initially enacted by NIPAS and declared others coastal areas as nationally protected parks. It also provides a strong emphasis on the accountability of national and local authorities to enforce and implement corresponding policies. Department of Justice was also required to appoint special prosecutors for violators of the said law and impose higher fines and penalties	National Law; enacted in 2018	Protected Area
Mangrove Reforestation Act	2014	<a href="#">Mangrove Reforestation Act of 2014</a>	This established the country's national mangrove reforestation program.	Legislative proposals In progress.	Mangroves
Timber moratorium	2011	<a href="#">Executive Order No. 23, series of 2011</a>	This order declared a moratorium on the cutting and harvesting of timber in the natural and residual forests (including mangrove forests) and created the anti-illegal logging task force.	Executive policies	Forests; Mangrove
National Greening Program	2011	<a href="#">Executive Order No. 26, series of 2011</a>	This order declared an interdepartmental convergence initiative for a National Greening Program, where mangrove rehabilitation was one of the main initiatives of the NGP.	Executive policies	Restoration
Philippine Disaster Risk Reduction and Management Republic Act	2010	Republic Act No. 10121 of 2010	Establishes the Policy on Philippine Disaster Risk Reduction and Management, to strengthen the country's institutional capacity for disaster risk reduction and management and building the resilience of local communities to disasters including climate change impacts, including ecosystem-based adaptation approaches	Republic Act	DRR; Climate Change
Climate Change Act	2009	Republic Act 9729	This act aims to integrate disaster risk reduction measures into climate change adaptation plans, development and poverty reduction programs.	Republic Act	Climate Change
Integrated coastal management (ICM)	2006	Executive Order No. 533, 2006	Adopted an integrated coastal management (ICM) as national government strategy to ensure the sustainable development of the country's marine and coastal resources. It likewise encourages LGUs to allocate portions of their Internal Revenue Allotment (IRA) for ICM projects and programs.	Executive policies	Management
Sustainable forest management	2004	<a href="#">Executive Order No. 318, series of 2004</a>	This order promoted sustainable forest management which includes the sustainable use of mangrove land and resources.	Executive policies	Forests; Mangrove
Revised guidelines on the establishment and management of CBP in protected areas	2004	<a href="#">DENR Administrative order No 2004-32</a>	The AO focuses on the community-based program that "shall be established to provide opportunities to organized tenured migrant communities and interested indigenous peoples to manage, develop, utilize, conserve and protect the resources within the protected area and its buffer zone." It involves a process whereby tenured migrant communities and interested indigenous peoples are assessed and organized based on their potential in resource management and will serve as basis for granting them tenurial instrument.		Land Tenure
Community-based Forest Management Strategy (Revised rules)	2004	<a href="#">DENR Administrative Order 2004-29</a>	Revised rules and regulations for the implementation of community-based forest management strategy.	Executive policies	Community forests
	2004	<a href="#">DENR Administrative Order 2004-04</a>	Guidelines for the utilization and transport of planted trees in private lands, including issuance of harvesting permits.	Executive policies	

Timber License Agreement Multi-year operations Plan	2004	<a href="#">DENR Administrative Order 2004-34</a>	Guidelines in the preparation, review, and approval of multi-year operations plan for timber license agreement holders, which includes timber harvested from mangrove forests.	Executive policies	Forests; Mangrove
Wildlife Resources Conservation and Protection Act	2001	<a href="#">(RA 9147)</a>	This law aims to conserve and protect wildlife species and their habitats for sustainability. It provides the conditionalities for the collection, possession, transport, export and/or import, registration, and introduction, reintroduction or restocking of wildlife species. It also lays down the basic requirements for the use of wildlife resources for bioprospecting, scientific research, and commercial undertakings as well as for botanical and zoological parks purposes. It establishes the Wildlife Management Fund; requires the establishment of National Wildlife Research Centers and Wildlife Rescue Centers; and mandates the creation of Wildlife Traffic Monitoring Units and the reputation/ designation of Wildlife Enforcement Officers who shall have the full authority to seize illegally traded wildlife and to arrest violators of the Act in conformity with existing laws, rules and regulations on arrest and detention. The Act is also the enabling legislation for the implementation of the rules and regulations of the CITES	National law	Biodiversity
Guidelines for the issuance of Fishpond Lease Agreements	2000	<a href="#">FAO-No.-197-s.-2000.pdf (da.gov.ph)</a>	Provided guidelines for the issuance of Fishpond Lease Agreements by the DA-BFAR for those mangrove areas that have been identified to be feasible for the development of fishponds. This was later amended by the FAO Guidelines (No. 197-1), that introduced the tenurial instrument on Aquasilviculture. Currently, another revision through FAO 197-2 is waiting for the approval of the DA Secretary. The new draft emphasized the full utilization of fishponds by increasing production and reviving the Philippine salt industry using the abandoned, undeveloped and underutilized fishponds.	Executive policies	Restoration
Mangrove Project Guidelines	2000	<a href="#">DENR Administrative Order No. 2000-57</a>	Guidelines Governing the Implementation and Management of Mangrove Subprojects under the Forestry Sector Project	Executive policies	Restoration
Philippine Fisheries Code	1998/2015	<a href="#">RA 8550: Philippine Fisheries Code of 1998</a>	This act prohibited the conversion of mangroves to fishponds or other commercial purposes. This was amended by R.A. No. 10654 in 2015 to give emphasis on interventions against illegal, unreported and unregulated fishing (IUUF).	National Law; enacted in 1998	Fisheries
Agriculture and Fisheries Modernization Act	1998				Fisheries
Community-Based Forest Management (CBFM) Projects Within Mangrove Areas	1998	<a href="#">DENR Administrative Order No. 98-10:</a>	Guidelines on the Establishment and Management of Community-Based Forest Management (CBFM) Projects Within Mangrove Areas.	Executive policies	Community forests; Land Tenure; Mangroves
The Indigenous People's Rights Act	1997	<a href="#">RA 7831: The Indigenous Peoples' Rights Act of 1997</a>	This act has a chapter specific for environmental considerations to protect the natural resources within the areas of ancestral domains, which may include mangrove forests, seagrass meadow and other coastal ecosystems.	National Law; enacted in 1997	IPs, mangroves
Philippine Economic- Environmental and natural Resources Accounting (PEENRA) System	1997	<a href="#">Executive Order No. 406 of 1997</a>	This order directs the institutionalization of the Philippine Economic-Environmental and natural Resources Accounting (PEENRA) System, creating units within the organizational structure of DENR, NEDA, NSCB and other agencies as necessary.	Executive policies	Finance

	1994	<a href="#">DENR Administrative Order No. 30 of 1994</a>	Implementing Guidelines for Non-Government Organization Assisted Community-Based Mangrove Forest Management (NGO-Assisted CBMFM) for the DENR	Executive policies	Community forest; mangrove
Community-based Forest Management	1993	<a href="#">Executive Order No. 263, series of 1993</a>	Aims to achieve sustainable forestry (inc. mangroves) and social justice. Participating organized communities may be granted access to the forestland resources under long-term tenurial agreements, called Community-Based Forest Management Agreement (CBFMA), provided they employ environment-friendly, ecologically sustainable, and labor-intensive harvesting methods. Indigenous peoples may likewise participate in the implementation of CBFM activities in recognition of their rights to their ancestral domains and land rights and claims. The production sharing agreement lasts for a period of 25 years and is renewable for another 25 years.	Executive policies	Land tenure
Forest Land Management Program	1993	<a href="#">DENR Administrative Order No. 23 of 1993</a>	Forest Land Management Program which promoted community involvement in the rehabilitation of forest lands, including mangrove forests.	Executive policies	Forest; mangrove
National Integrated Protected System Act (NIPAS)	1992	<a href="#">RA 7568: National Integrated Protected System Act of 1992</a>	This act established the national integrated protected areas system and the creation of the administration and management plans for the system.	National Law; enacted in 1992	Protected Area; Biodiversity
Mangrove Stewardship Agreement	1991	<a href="#">DENR Administrative Order No. 03 of 1991</a>	Policy and Guidelines for the Award and Administration of the Mangrove Stewardship Agreement.	Executive policies	Mangrove
	1990	<a href="#">DENR Administrative Order No. 15 of 1990</a>	Regulations Governing the Utilization, Development and Management of Mangroves Resources.	Executive policies	Mangrove
Comprehensive Agrarian Reform Law	1988	<a href="#">RA 6557 of 1988</a>	This act declared fishpond areas and mangrove forests as exempted from the Comprehensive Agrarian Reform Law. It is valid for 10 years.	National Law; enacted in 1998	Fisheries; Restoration
Buffer zones for mangroves	1987	<a href="#">DENR Administrative Order No. 76 of 1987</a>	Established the regulations for buffer zones in Coastal and estuarine mangrove forests	Executive policies	Mangroves
Presidential Decree No. 704, series of 1975	1975	<a href="#">Presidential Decree No. 704, series of 1975</a>	This law is one of the earliest acts that formed and consolidated all laws affecting fishing and fisheries - including the disposition of public lands, including mangrove forests, to fishponds.	Enacted while the Philippines was under Martial Law, between 1972-1981	Fisheries; Mangroves
Fish pond conversion	1975	<a href="#">Presidential Decree No. 705, series of 1975</a>	This law identified the kinds of lands that could be disposed by the government for fishpond conversion and also declared a 20-meter-wide mangrove strip facing shore areas to be declared as protected for coastal protection.	Enacted while the Philippines was under Martial Law, between 1972-1981	Fisheries
Establishment of LMMPA	multiple		[Multiple regulations based on LGU] Local Ordinances that establish Locally-Managed Marine Protected Areas (LMMPAs)	Local ordinances	Protected Area; LMMPA